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OPHTHALMOLOGY

ESSAYS, ABSTRACTS AND REVIEWS

VOL. II 1905 Oct- JULY, 1906 No. 4

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EDITORIAL AND PUBLISHING OFFICES:
105 GRAND AVE., MILWAUKEE, WIS., U. S. A.

Owned, Edited and Published by and for the Profession
PRICE: Per Number, $1.50 (6s.). Per Year, $5.00 (£1, s.1.)

GEORGE KEENER AND COMPANY, 16a, RED LION SQUARE, LONDON, W.C.
Agents for Europe and the British Colonies.

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OPHTHALMOLOGY
ESSAYS, ABSTRACTS AND REVIEWS.

Vol. 2. October, 1905. No. 1.

Original Articles.

PARALYSIS OF DIVERGENCE.*

By Alexander Duane, M.D.

NEW YORK.

SYMPTOMS.

Divergence-paralysis is a condition characterized by the following signs:

1. Sudden development of an *homonymous diplopia* with a marked convergent squint and with or without *vertigo, false projection,* and an *apparent movement* of objects looked at. The patient notices that the diplopia is particularly marked and confusing for distance (on the street, in church or the theater, etc.), but is absent in reading or sewing. If the diplopia is slight it can usually be obviated by tipping the head forward so as to direct the eyes slightly up. These subjective symptoms are often but little marked; and, in general, they are less pronounced than they are in a true muscular paralysis, e. g., in a paralysis of the externi, which superficially this condition resembles.

2. On examination we find that the amount of the diplopia and of the convergent squint, measured in degrees, is great for distance and *decreases with almost mathematical regularity as the object looked at is brought toward the patient,* until at a certain definite distance (usually a few inches) from him, there is binocular single vision. At the point where this begins there is still a slight tendency to undue convergence of the eyes (esophoria), but, as the object is brought nearer yet, the esophoria changes first into orthophoria (indicating the point where the eyes are in equilibrium) and then almost immediately into exophoria. This exophoria increases down to the point where the eyes can no longer converge upon the object, i. e., down to the convergence near-point. This, instead of being abnormally close to the eyes, as we might suppose, is often rather remote (over 2 inches from the root of the nose). This is true, at least, of the uncomplicated cases. When a

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*Read before the Brooklyn Society of Neurology, Jan. 26, 1905.

convergence-excess is present the convergence near-point may be unduly close.

3. In almost all cases, but particularly if there is much complicating convergence-excess, it will be observed that when the object of vision has been brought so close that it is seen single (*single vision by approximation*), the patient can then still hold the images together (a) when prisms, base in, of several degrees strength are placed before the eyes, or (b) when the object is slowly carried off again some considerable distance (*single vision by recession*).

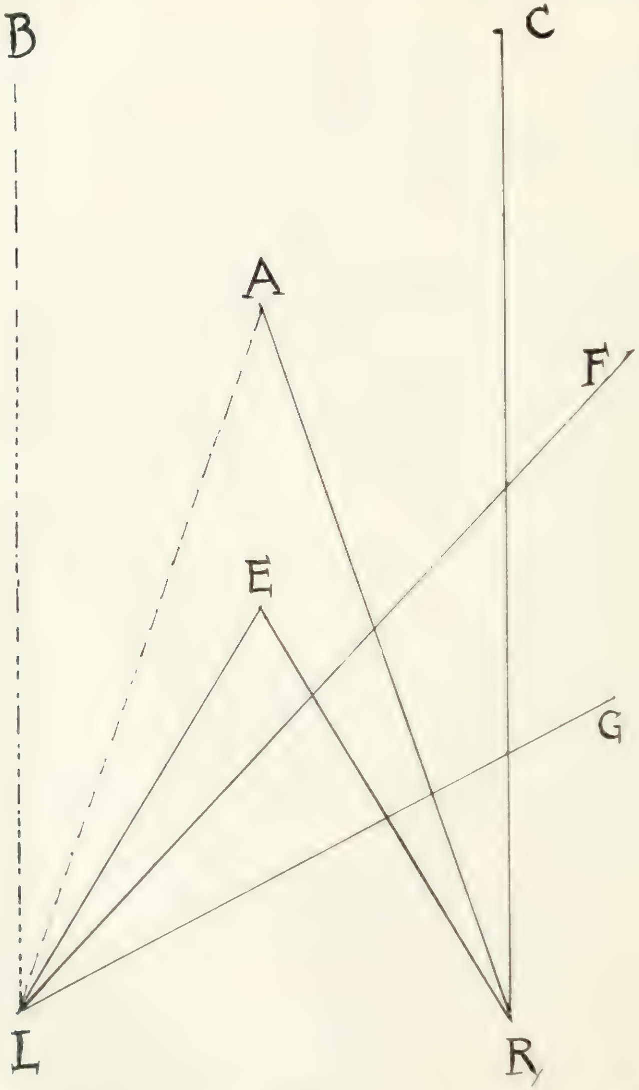

Figure. 1.

4. The homonymous diplopia and the convergent squint do not increase—in fact they usually diminish somewhat—as the *eyes are carried to the right and to the left.** Diplopia and deviation diminish somewhat in looking up, increase in looking down.

5. The excursions of the eyes (even of the squinting one) are *normal in all directions.* Only, after the condition has lasted for some time, a slight restriction of outward movement can be observed, especially in the squinting eye.

6. The conditions found are *often strikingly stable.* The deviation and diplopia may increase at first until a certain maximum is reached, then usually remain the same for months or even years.

Closely allied to divergence paralysis, and, indeed, shading into it is the condition known as *divergence-paresis* or *divergence-insufficiency.* The distinction between a paralysis and an insufficiency may be made as follows:

DIVERGENCE-PARALYSIS.	DIVERGENCE-INSUFFICIENCY.
1. Development sudden, and subjective symptoms usually marked, at least at the onset.	1. Often no history of sudden development; spontaneous diplopia and other subjective symptoms often absent or little marked.
2. Amount of diplopia for distance marked (10 degrees to 50 degrees prism.	2. Less marked (0 degrees to 25 degrees prism).
3. Amount of diplopia for distance, measured by the prisms, base out, which just unite the double images, can not be diminished much by voluntary effort.	3. Amount of diplopia for distance can be diminished by effort—the patient who at first just sees single with a certain prism, being able, by effort, to unite the images with a still weaker prism, base out, or even being able to overcome a prism of 1 degree or 2 degrees, base in.
4. At any given distance the amount of deviation, measured by the screen equals, or nearly equals the amount of insuperable diplopia measured in degrees.	4. At any given distance the amount of the insuperable diplopia is always less than the amount of the screen-deviation.
5. Range of single vision obtained when the object of vision is withdrawn from the eyes, i. e., the distance between the point where single vision is first secured when the test-object is brought up to the eyes, and the point at which single vision is lost again when the object is once more gradually carried off—is small.	5. Range of single vision on recession of object, large.

---

* In testing this the object should be carried along the arc of a circle so as to maintain a constant distance from the eyes.

NATURE.

The condition present in this and similar cases is *distinguished from a bilateral paralysis of the externi* or from a *contracture of the interni* by two cardinal facts. First, there is no limitation of outward nor excess of inward movement in either eye. Second, the diplopia does not increase (in typical and especially in well marked cases it usually diminishes*) as the eyes are carried to the right or to the left.

From a *spasm of convergence,* the condition is differentiated, first, by its usually stable character; second, by the fact that the deviation diminishes progressively as the object of fixation is carried toward the eyes.

The only satisfactory explanation of the condition is that it is due to a *paralysis of divergence.* To understand the idea conveyed in this term, we must consider what occurs normally when we converge and diverge.

When we converge the eyes upon a near object we do so by means of an equal simultaneous contraction of the two interni. This contraction is effected by a special nervous mechanism, the true nature of which has recently been elucidated by Bernheimer[18] and Bechterew.[22]

Now, under normal conditions, when the eyes are thus converged, they may diverge again to look at a more distant object. When this occurs, the two interni relax and at the same time the two externi contract. This latter factor in the movement has been questioned (Graefe,[15] Berry[20]) but all the probabilities are in favor of it. Indeed, some clinical facts seem inexplicable unless we admit it. It appears, in fact, that when we diverge we have (a) an inhibition of the converging mechanism, and (b) a stimulation of a diverging mechanism, which appears to consist of the two abducens nuclei and certain cortical centers connected with them. (See Bechterew's investigations cited below.) Per contra, when we converge we have an inhibition of this mechanism and a stimulation of the mechanism for convergence. The eyes are thus balanced between two opposing forces, one always increasing as the other abates. In so doing they follow the law discovered by Sherrington[8] and Topolanski[13] that the mere act of stimulating the brain center for one movement inhibits the center for the opposing movement; and, per contra, the mere act of inhibiting one throws the other into action. Hence, if the mechanism for divergence is out of gear—in other words, if we have a *divergence-paralysis*—the eyes immediately assume a position of convergence, because the converging power is not only unopposed, but is also actually stimulated. Accordingly, the eyes are converged to a certain quite near point E (see Figure 1), which we may call the point of equilibrium. The function of divergence being abolished, the eyes can not be directed at any point beyond E by a mutual separation of the visual axes in the usual way. But they can still perform simultaneous parallel movements to the right or to the left, just as before. Hence, when the patient wishes to look at a point A more distant than E, he turns his right eye (R) to the right through the angle E R A, and turns the left eye (L) to the right, through an equal angle, E L F, so that the left eye squints in by an angle A L F = 2 E R A. It is evident that this angle of squint should increase in strict mathematical proportion as A recedes. In fact, in a deviation due solely to a divergence-paralysis, the squinting angle, B L G, when the eyes are directed at remote distance (i. e., when right eye is looking in direction R C), should theoretically be just equal to the angle L E R made by the visual axes when the eyes are in equilibrium (i. e., when the deviation is 0 degree).* In my Case 1 this correspondence was almost precisely exact. In other cases, in which the element of a convergence-excess is present (see infra) the squinting angle for distance is less than L E R.

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* Straub [illegible] was the first to call particular attention to this diminution, although Parinaud[illegible] first noted it. It was marked in Cases 1, 2 and 3 [illegible] below. It is not, however, always present. It is probably due as Berry[illegible] says to the fact that in looking to one side we habitually converge our eyes less than when looking at an object straight ahead.

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* If the angle of squint, i. e., the amount of deviation, for distance, expressed in degrees is denoted by S, then the amount of deviation S′ at any nearer point B is denoted by the formula $S' = S - \frac{345}{D'}$, where D′ is the distance of B in cm. from the base line connecting the centers of rotation of the two eyes. When $S' = O$, i. e., when the eyes are in equilibrium, then $D' = D_0 = \frac{345}{S}$; D_0 denoting the distance of the point of equilibrium from the intercentral base line. Thus, suppose the screen deviation and the diplopia for distance are just abolished by the prism of 20°, base out. Such a prism represents an actual deviation S of 11°. Then $D = \frac{345}{11} = 31$ cm., i. e., the point of no deviation or at which orthophoria would obtain is 31 cm. from the intercentral base line, or about 29 cm. from the root of the nose. At 100 cm. from the eyes the deviation $(S') = 11 - \frac{345}{100} = 7.5°$ actual deviation, corresponding to a prism, base out, of 15°. As a matter of fact, S and D_0 are almost invariably less than they should be according to this computation: i e., S is usually less than LER. The reason probably is that the very act of bringing the test object around the eyes begets a spasm of convergence which, as stated above, brings D_0 unduly close. Moreover, it is to be considered that the attempt to look at distance in these cases represents really a turning of the eyes to one side. Now, in the divergence paralysis, the amount of the deviation tends to diminish as the eyes are turned to one side. Hence, especially if the degree of the paralysis is considerable S (= the amount of deviation for distance = really the angle made by the visual axes when the eyes are turned to the right or left through an angle of ERA), would be less than LER, or the angle made by the visual axes when the eyes are directed at a point in the median line.

The *diminution of the diplopia observed when the patient looks up* and its increase when he looks down are due to the fact that physiologically the eyes tend to diverge when directed up and to converge when directed down, so that a pathological homonymous diplopia, otherwise constant, is always less in the upper, and greater in the lower field.

HISTORICAL.

Cases of paralysis of divergence were first described by Parinaud in 1883,[3] and in 1889[5], then by Stölting and Bruns[6]; then by Uhthoff,[7] by Straub,[10] by Dor,[11] and by Sachs.[12] I described my first case in 1899.[16] At the meeting of the Heidelberg Ophthalmological Society in 1900, Bielschowsky[19] described three cases, and others were developed in the discussion. Three years before this I described[9] cases of this sort, in which there was not actual paralysis, but simple *insufficiency of the diverging action,* and pointed out how certain very troublesome cases of esophoria fall within this category. This fact has been still further elucidated by Wootton,[21] who has clearly demonstrated its practical importance in explaining the development and in determining the treatment of convergent squint.

The cases of divergence-paralysis, in fact, are not so very rare; and as pointed out in the article just mentioned,[16] v. Graefe, as far back as 1860[1] spoke of cases of this sort, but interpreted them in a way which we cannot now but regard as erroneous. Other instances doubtless occur in the literature of ophthalmology. See, for example, the case of Theobald's.[4]

CAUSE.

In six of the recorded cases (including my Case 1) an organic *brain lesion* appeared to cause the difficulty—there being a history of syphilis, tabes, multiple sclerosis, lead poisoning, or evidence of cerebral tumor. One other case appeared to be due to concussion of the brain[17] and still another (of long duration) to an antecedent pneumonia or pleurisy.[7] But, in the majority of cases the affection occurred *without obvious cause,* although from the suddenness of development and the permanence of the symptoms it seems not unreasonable to infer that it was due to a localized hemorrhage.

The condition in two of Uhthoff's cases was *preceded by a bilateral abducens paralysis,* and in one of Bielschowsky's appeared to go into a unilateral paresis of the abducens. Compare my Case 11, which may have started as an abducens paralysis; also Case 10, cited below.

Stölting's case started from what he calls an insufficiency of the externi, but what was actually, as his record shows, a very marked convergence-excess, which was increased, as is often the case, by the wearing of prisms. I have elsewhere pointed out[8] that this *superadding of a divergence-insufficiency upon a convergence-excess* is a frequent, indeed, a regular phenomenon. When this happens a deviation, which at first is marked for near-points only, becomes complicated by the addition of a similar deviation for distance.

Paralysis of divergence occurs at all ages (from 2 to 84) and about equally in the two sexes. It occurs more often in conjunction with hyperopia, but myopes are not exempt.

SITE OF LESION.

In the absence of autopsies we can only guess at the site of the lesion. A priori, it would seem probable that it would be found in close relation with the two abducens nuclei, whose actions are co-ordinated by some tract effecting the divergence function. This probability is perhaps strengthened by the fact already alluded to that a bilateral abducens paralysis may be converted into a divergence-paralysis, and, on the other hand, a divergence-paralysis may pass into a paresis of the abducens.

COURSE AND DURATION.

The duration of this affection is uncertain. The condition remained unchanged for five years in one of Uhthoff's cases, for at least four years in my Case 1, and probably longer still in Case 3; while in Dor's case (which was incomplete), the condition had decidedly improved, but was not yet completely cured in a year and a half from its onset. The subjective symptoms may improve or become less noticeable, although the condition itself remains quite stabile. (Cf. Case 6.)

The cases of divergence-insufficiency that I have seen seem to last indefinitely.

A divergence-paralysis or a divergence-insufficiency which has lasted some time is *often followed by a convergence-excess,* occurring either as a more or less transitory spasm or as a continuous, steady over-action of the convergence. This sequel, which is doubtles but another instance of the operation of Sherrington's law, produces a marked increase in the deviation for near. The deviation for distance may also be increased, but never to the same degree. The result is that the mathematical decrease in the amount of the deviation when the test-object was brought toward the eyes is no longer preserved, but the angular amount of the deviation and of the diplopia tends to become more nearly alike at all ranges. [8, 21] (Cf. Cases 2 and 4.)

The presence of such a marked convergence-excess may be inferred when:

1. The deviation for near is relatively much greater than it would be in a simple divergence-paralysis with the same amount of deviation for distance.*
2. The point of equilibrium is much closer to the eyes than it would be in a simple divergence-paralysis with the same amount of deviation for distance.
3. The point of equilibrium is much closer than the point of binocular single vision. (See Case 2, examination of June 1, 1901.) (See also Case 7.)
4. The distance of the point of equilibrium varies considerably from time to time without corresponding variations in the amount of deviation for distance. (See Case 4.)

Again, after a divergence-paralysis has lasted a certain time, the forced position of the squinting eye produces apparently *secondary muscular changes,* i. e., contracture of the internus, stretching and weakening of the externus. Then the range of inward movement in the affected eye is actually increased and the range of outward movement is actually diminished. (See my Case 2.) When this occurs the affection may be regarded as in a sense monocular; until then it is strictly a binocular condition[9], [24].

Divergence-paralysis may be complicated by a paralysis or spasm of one of the *vertical muscles* (see Cases 3, 4, 6), or an *association-paralysis* of up or down movement. Or, it may be *complicated with a paralysis of convergence* as in some of Parinaud's cases and in my Case 3. Moreover, the diminution in the amplitude of fusion that Graefe[23] noted as occurring in tabes and cerebral paralysis is often probably nothing but an example of the same combination. When such a combination occurs, the eyes assume a position of equilibrium beyond which they cannot diverge and within which they can not converge to any extent. Hence the range of single vision is limited to a space of a foot or so, or sometimes only an inch or two, within or beyond this equilibrium point.

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* I. e., S' is much greater and D' is much less than they should be according to the formulæ, $S' = S - \frac{345}{D'}$ and $D' = \frac{345}{S}$, given on p. [illegible] ante

For all points beyond this range there is an increasing homonymous diplopia and for all points within it an increasing crossed diplopia. In the position of equilibrium the patient can not overcome prisms of more than a few degrees, base in and base out. The position of equilibrium itself may, according to circumstances, be either one of parallelism, of convergence, or of divergence. The similar *combination of a divergence-insufficiency with a convergence-insufficiency* is not very infrequent, particularly in neurasthenic cases.[9]

TREATMENT.

Correction of the *refraction* is of help mainly when a primary or secondary convergence-excess is present and aggravates the condition. In a pure divergence-paralysis glasses are of little use and may even aggravate the symptoms by enhancing the distinctness of the double images and so rendering it harder for the patient to ignore them.

In some instances, *prisms,* base out, have been used with advantage. Obviously, they are of service only when the deviation is slight. If there is much complicating convergence-excess, prisms may tend to make the deviation progressively worse.

In some cases* *tenotomy* of the interni has proved efficacious. It would seem particularly indicated when the element of a secondary convergence-excess is prominently present. Otherwise *advancement* of the externi would appear more rational. In any case an operation would be contraindicated unless we could feel sure that the process was stationary. In esophoria and convergent squint due to a divergence-insufficiency, advancement of the externi is indicated and gives satisfactory results[9], [21].

In the cases due to organic disease *internal treatment* is, of course, indicated.

APPENDIX.

Graefe[15] and Berry[20] believe that there is no such thing as an active divergence and that consequently there can be no such condition as a divergence-paralysis. Cases of the sort given in the present paper are in Berry's opinion really due to a spasm of convergence. This condition perhaps did hold for Berry's case, in which the conditions were more or less changeable, but certainly could not hold for my Case 1, and other similar cases in which the *conditions remained stable* for years.

Quite impossible to explain on Berry's hypothesis are those cases cited above in which *both convergence and divergence were abol-*

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* Theobald.[4] Uhthoff.[7] Sachs.[12] Lederer.[19]

ished, for his explanation would involve the contradiction of supposing that in the same case there was at the same time a paralysis and an active spasm of convergence. Particularly instructive in this regard was my Case 3, because here the evidences of a paralysis of convergence were complete, and before the operation for advancement the eyes were practically parallel and remained so, no matter how near or how far the object of fixation was. In other words, they were constantly fixed on far distance. All that the operation did was to shift mechanically the point of equilibrium from far distance down to some 20 inches, and the convergence finally obtaining was due not to the spasm of convergence, but to the operation.

Furthermore, in cases of undoubted spasm of convergence, such as we see in children with beginning convergent squint, the amount of the deviation increases as the object of fixation is carried toward the eyes. In the cases now under consideration it *decreases.*

Again, the rather frequent condition that we call a *divergence-excess,* seems difficult to explain unless we concede the existence of an active diverging function. In these cases convergence is evidently normal, as shown by the following facts:

(a) The patient can readily overcome prisms, base out.
(b) The convergence near-point is normally close to the eyes.
(c) There is very little or no exophoria for near.

There is then no insufficiency of convergence, and the relations for near points are normal. Yet when the eyes are directed at distance there is a high degree of exophoria, or, it may be, a well-marked divergent squint. Moreover, the amount of exophoria increases as the object of fixation is carried away from the eyes—conditions the reverse of those which obtain in a convergence-insufficiency. It seems difficult to explain these cases except by supposing that there is an active diverging power which is here exerted to an excessive degree.

Lastly, Berry's ideas as to the non-existence of a substantive function of divergence are not in accord with the teachings of physiology. Apart from the positive results obtained by Bechterew,[22] which, if corroborated, would be conclusive against it, the idea that divergence represents merely a passive relaxation of convergence is opposed to all that we know of muscular action in general. Opposing movements elsewhere—flexion and extension, abduction and adduction—are invariably performed by the alternate contraction of opposing muscles, not by the alternate contraction and relaxation of a single muscle.

CASES.

In all of the subjoined cases it is understood that the diplopia and the deviation steadily diminished as the object looked at was carried toward the eyes until a point was reached at which the object appeared single (*single vision by approximation*). The (usually nearer) point at which the patient showed orthophoria is called the *point of equilibrium.* When the object, having been first brought up until single vision was secured, was carried off again, the patient usually was able to keep the double images united some distance out (*single vision by recession*). The situation of these various points is indicated by their distance from the base-line connecting the centers of rotation of the two eyes. In all cases the fundus was normal (except for the slight pallor of the discs in Case 1).

I have seen the following cases, including some of the more well-marked cases of apparently primary divergence-insufficiency:

CASE 1.[12]* *Strabismus Convergens of Six Years' Standing Due to Paralysis of Divergence. Associated Lateral Movements and Convergence Unaffected. Beginning Tabes.*—Mrs. J. H., aged 35, married. Seen at my office November 19, 1898.

History.—Six years ago attack of neuralgia, associated numbness and paresis of left arm, with sudden attacks of amblyopia. Then diplopia set in with a gradually increasing convergent squint. Ever since has suffered from various nervous troubles, especially neuralgic pains in the head (hemicrania) and spine (lightning pains).

In January, 1895, examined by Dr. Pischel, of San Francisco, who found an esophoria of 34° for distance, and of 20° for 40 cm. After operation, 14° for distance, 0° at 40 cm. Pupillary symptoms as now, but pupils slightly unequal. No other evidences of tabes at that time. Dr. Pischel did a tenotomy of the left internus, and later an advancement (capsular) of the left externus. This producing only an incomplete correction, he very properly proposed to do a similar operation upon the right eye, but this the patient refused.

Head symptoms somewhat relieved by operation, but other symptoms very troublesome. Some of these attributable to uterine and ovarian disease, from which she suffers. Is using +0.50 sph. for distance and near.

Status Præsens. *Vision*: — 15/15 — each. R. accepts + 0.25 cyl. ax. vert. L + 0.50 sph. wi. + 0.50 cyl. ax. vert. Under homatropin, R. 15/50 wi. + 1.25 sph. 15/15: L. 15/70; wi. + 1.75 15/15. Accepts these glasses after effects of homatropin had worn off.

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* Quoted from Arch. of Ophthal., vol. xxviii, 1899.

Field of Vision.—Perfectly normal for even the minutest test-objects and all colors.

Exterior of Eye.—Normal, except for old macula corneæ L. eye.

Pupils.—Of medium width, and equal. No reaction to light; slight but distinct reaction to convergence.

Fundus.—Normal, except for a well-marked sector of temporal pallor in both discs.

Muscles.—At fifteen feet, esophoria of 25° and 26° by all tests (screen, parallax, Maddox rod, phorometer). L. hyperphoria, 2°. Strictly monocular vision for distance, R. eye alone being used for fixation. No spontaneous diplopia for distance under ordinary conditions, but gets homonymous diplopia with red glass, and also when deviation is partly corrected by a prism of 13° base out.

Esophoria diminishing to 15° when the gaze is directed moderately far to either the right or the left. This diminution in lateral rotation apparent at all distances. Esophoria and the diplopia also diminishing progressively as the test-object is approximated to the eyes, until, at a distance from 20 to 25 cm. there is single vision and orthophoria. Within this limit there is exophoria. Convergence near-point 2 inches, or somewhat more from root of nose (i. e., slightly subnormal convergence).

Field of fixation, field of binocular single vision (at near), and excursion movements of eyes unrestricted in all directions. The outward movement, or abduction, greater than the inward movement (adduction) in each eye, and excursions of L. eye less than R. in both directions (abduction, R. 65°, L. 50°; adduction, R. 45°, L. 40°).

Extra-ocular Signs.—Romberg symptom. Absence of knee-jerk. No ataxia.

Subsequent examinations (the last one made January 26, 1899) confirmed the above findings in all respects.

CASE 2.* *Paralysis of Divergence, Consecutive Divergence-excess and Slight Contracture of the Internus.*—Mrs. S., aged 27, came on March 1, 1901, to the Ophthalmic and Aural Institute, service of Dr. Lynch. For two weeks, diplopia, vertigo, apparent movement of objects looked at. Symptoms especially marked when she is walking on the street. At near points has but little trouble and at the reading distance none at all. Two weeks before the symptoms appeared, fell down stairs, but apparently had no ill effects whatever from her fall beyond a few bruises on her body. No history of specific or other disease; no headaches.

Status Præsens.—Moderate degree of mixed astigmatism; V. 20/50. No change in fundi. Pupils equal, of moderate size, and react normally to light and convergence. Knee jerks normal. No anaesthesia of face. No paralysis of body muscles.

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* Presented at the meeting of the Section on Ophthalmology of the New York Academy of Medicine, March 18, 1901, by Dr. Lynch and myself.

Convergent squint and homonymous diplopia *in all parts of the field of fixation,* but at all ranges *most marked when the eyes are directed straight* to the front, and diminishing considerably (to half the amount) when she looks either to the right or the left. Single vision by approximation at 17 cm.

Deviation by screen as follows:

	Prismatic Deviation.	True Angular Deviation.
At 5 m.	38°	23°
At 60 cm.	23°	13°
At 30 cm.	20°	11°
At 17 cm.	4°	2°
At 10 cm.	0°	0°

No restriction in outward movement of either eye; the outer margin of the cornea being readily carried to or beyond the outer canthus.

During the first eighteen days that the patient was under observation, deviation and diplopia increased until the latter became 50° (prism = 35° deviation of arc) at 20 feet and persisting down to about 4 inches from the eyes. Although she can fix with either eye at will, she usually does so with the right, so that the left is habitually in a position of marked inward squint. Owing to this forced position of the left eye, the diplopia now increases somewhat when she looks moderately to the left[*], but it *decreases once more when she looks still further to the left,* and the outward excursion of the left eye is still normal.

The subjective symptoms, particularly the vertigo, have increased in severity, and there are now vertigo and an apparent movement of objects not only in binocular vision, but also *when the left eye alone is used for seeing.*[†]

	Prismatic Deviation.	Real Deviation.
At 5 m.	35°-40°	21°-25°
At 60 cm.	23°-36°	13°-21°
At 30 cm.		10°-16°

Binocular single vision at 16-17 cm. representing a convergence of 22°. Point of equilibrium at 8 cm. (representing deviation of 40° for distance); i. e., there is now, as before, a marked convergence-excess superadded to the divergence paresis. At 1 m. homonymous diplopia diminishing markedly to the right and the left; i. e., deviation has diminished considerably in amount, although its character is precisely the same. There is slight limitation of movement of left eye outward, due doubtless to the continuous forced positions of that eye inward (slight secondary contracture of internus). The case was followed for six months, during which period symptoms showed no essential change. Various fugitive pains in head. Moderate contraction of visual field in each eye, especially below, noted at two examinations. Never any indication of organic nerve lesion.

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[*] Cf. Uhthoff's first case.[7]

[†] Sachs[12] has called attention to this feature of these cases, in which, although the affection is bilateral, monocular projection may be interfered with.

CASE 3. *Convergence and Divergence-Paralysis, Paralysis of Superior Rectus.*—Honora P., aged 22. At age of 13, without assignable cause, sudden development of vertical and lateral diplopia. Oculist found then a right hyperphoria of 9°. Various operations were done to relieve this. One of these producing a marked overcorrection, a tenotomy of the left superior rectus was done. When I first saw her (April 3, 1902) had a marked paresis of both superior recti, that of the right being probably altogether and that of the left partly due to the preceding tenotomies; also a (probably post-operative) insufficiency of the left inferior rectus. At 15 feet exophoria, and crossed diplopia of 2°. When this is corrected, can not overcome a prism of 1° either base in or base out. At 32 cm., exophoria 20° (screen) and at 35-40 cm. crossed diplopia overcome by prism of 13°. At this distance can also see single with a prism, base in, of 14°, and sometimes with one of 12°, but with prism of 11° gets insuperable crossed, and with 15° insuperable homonymous diplopia; i. e., at all ranges convergence and divergence of not over 1° prism (= ½° actual deflection). Lateral rotations of both eyes normal. Reaction of pupils to light well-marked; to convergence nil. Accommodation normal. Afterward by practice succeeded in running up the diverging power at distance to 5° (i. e., net diverging power of 3° when exophoria was corrected) and the converging power to 8° (= net convergence of 10-8°). Could also reduce the crossed diplopia at near-points to nearly 0°. At times can turn left eye in well in convergence, and then there is a well-marked convergence-contraction of the pupils. All her attempts at overcoming prisms, base out, marked by evidences of great effort (contraction of frontalis and orbicularis, etc.), and, moreover, she can never hold the images together for more than a moment. Continued practice carried her no further.

In September, 1902, an advancement of left internus produced, as the primary result which also had remained the permanent result during two and a half years of observation, the following:

For distance homonymous diplopia of 8° to 10°. Diplopia continues down to about 40 cm.* where she gets single vision, which is almost immediately succeeded by crossed diplopia. Range of single vision not more than 5 or 6 cm. (sometimes not over 3 cm.) and, at the midpoint of this range, divergence and convergence after considerable training about 4° each (but sometimes can not do 1° either way). As before, occasional momentary convergence by spasmodic effort. Excursion of right eye over 60° out, and over 65° in; of left eye 45° out and 55° in.

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* This point of equilibrium receded later to 57 cm.

The advancement thus simply shifted her point of equilibrium from far distance down to a point about 1½ feet from the eyes.

CASE 4. *Paresis of Divergence with Convergence-Excess.*—Mrs. J. W. C., aged 33. Seen March 12, 1901. Asthenopia; blurring of vision for near work. No diplopia noticed, except occasional vertical diplopia in reading music. Under homatropin showed: R. + 1.25 sph. + 0.25 cyl. 70° 15/15. L. + 2.50 sph. 15/30. Pupils of medium width and equal; all reactions normal. Left esotropia of 10-11° and homonymous diplopia of 10° for distance reducible sometimes by effort to 6° or 7°. Single vision by approximation at 30 to 45 cm.; by recession 1 m. or more. Point of equilibrium usually at 15 to 22 cm., but at times (evidently under the influence of a temporary convergence-spasm, which is probably due to accommodative effort) the equilibrium-point is brought as near as 11 cm., and then there is an increase in the amount of esophoria for distance and a still greater increase in the amount for near. Diplopia and convergent squint increasing somewhat when she looks down and diminishing when she looks up; diminishing moderately when she looks to the left, and remaining about the same or possibly increasing slightly when she looks to the right. With her glasses (partially correcting her refraction) convergent squint for distance is reduced to 7°, although she still usually has homonymous diplopia at all distances beyond 1 m. and her point of equilibrium is at 30 cm. Varying vertical diplopia (left hyperphoria) increasing (sometimes rather markedly) in looking down and to the right. No limitation in the movements of either eye.

In January, 1903, findings the same in all respects, except that the tendency to vertical deviation had disappeared.

Here there was evidently in addition to the divergence-insufficiency a well-marked convergence-excess. This was the case even when the accommodative element was largely eliminated by a partial correction of the refraction. For, with a prism-deviation of only 7° or 8° for distance, representing an actual deviation of arc of only 4°, the point of equilibrium should have been nearly 1 m. from the eyes if the case had been one of divergence-insufficiency. As a matter of fact the equilibrium point under these conditions was at about 30 cm. from the eyes, and when the accommodation was called particularly into play (either by disuse of the glasses or by the initial effect of an instillation of homatropin, which often causes marked temporary accommodative effort) the equilibrium point was approximated to 22, 17, or even 11 cm., and the amount of esophoria for near-point was unduly increased.

CASE 5. *Divergence-Paresis.*—Miss S. C. M., aged 84. For years has had diplopia for distance, and to relieve this has worn prisms, now using R. + 1.00 cyl. 25° ⊃ prism 4°, base out; L. — 1.00 sph. ⊃ prism 5°, base out.

With her glasses V. = 15/80 each (poor vision due to incomplete cataract). Without her glasses has for distance homonymous diplopia of 14°, which by effort she can reduce to 7°. About the same amount of deviation by screen and Maddox rod. Diplopia not increasing to either right or left; increasing somewhat in looking down, diminishing in looking up. Single vision by approximation at 30 cm. Little or no vertical diplopia in any part of the field of fixation.

CASE 6. *Paresis of Divergence.*—Mrs. J. R. H., aged 62, seen January, 1905. Two years ago L. eye suddenly began to squint, and at the same time began to see double in church and on street. No vertigo. Got glasses containing prisms (thought to be 2½° each, base out) and more recently present glasses (+ 1.75 c. prism 1°, base out, each, for distance, and + 5.00, without prisms, for near). Diplopia has remained about the same in amount since onset of trouble. Sees better when she throws head forward so as to look up slightly. R. + 2.00 + 0.25 cyl. 90° 15/15. L. + 1.75 + 0.25 cyl. 180° 15/15. For distance, with her correction, shows

	Diplopia corrected by prism of		Real deviation of
5 m.	22°	=	12°
2 m.	20°	=	11°
1 m	14°	=	7°
0.5 m	8°	=	4°

Single vision by approximation at a little less than 1 m.; by recession out to about 1 m. with her near glasses. Point of equilibrium at about 20 cm. For distance R. convergent squint of 22° (prism = 12° actual deviation). Homonymous diplopia same or increasing very slightly in looking to right and left. Inconstant and changing vertical diplopia, indicating spasm or insufficiency of depressors. No restriction in outward movement of either eye. Pupils react to light.*

CASE 7. *Divergence-Insufficiency.*—Alexander C. M. P., aged about 68. Seen April 11, 1900, and conditions essentially the same when seen in October, 1902. No diplopia nor other symptoms referable to the eyes, except an irritation, apparently the result of a mild conjunctivitis. R. —1.00 cyl. 170° 15/15 +; L.—0.25 cyl. 55° 15/15+. Homonymous diplopia of 10° for distance, and convergent squint of about this amount or less. Point of equilibrium 18-20 cm. Single vision by approximation at 1 m.; by recession out to 5 m., at which distance he gets alternate single vision and homonymous diplopia. At times by effort can even overcome a prism of 2°, base in, for distance, and if the test-object is at 30 cm. he can overcome a prism of 10° or 12°, base in.

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* This case has been repeatedly examined since and has always shown precisely the same relations (last examination, June 24, 1905), although the diplopia is much less annoying than formerly.

CASE 8. *Divergence-Insufficiency.*—Arthur A. D. B., aged 26. Seen April, 1902. Asthenopia dolens and blurring of sight in reading. Supraorbital and ocular pain. Using for four years R. + 0.50 + 0.25 cyl. 180°; L. + 0.75 + 0.50 cyl. 180°. Under homatropin shows R. + 1.00 15/15 —; L. + 1.50 15/30 —. Without and also with glasses (R. + 0.75; L. + 1.25) shows for distance esophoria 1°-1.5° (parallax and phorometer), 2° (Maddox); prism divergence, 1°; with red glass homonymous diplopia which persists down to about 3 feet from eyes. At 25 cm. exophoria 1° to 5°. Convergence near-point normal. At 35 cm. prism-divergence of 9° and afterward of 10°.

The following cases occurred in the practice of Dr. Colman W. Cutler, and I am indebted to him for the privilege of examining them:

CASE 9. *Divergence-Paresis.*—G. F. R., male, aged 24. No history of syphilis, rheumatism or exposure to cold. General health excellent. Habits good (smokes moderately). Worries a good deal over his business. Eight days before Dr. Cutler saw him, suddenly developed diplopia after going to the theater. No headache, nausea or vertigo. Diplopia for distance only, but reading causes fatigue. Under atropin shows R. and L. + 0.25 + 0.25 cyl. 180°, which he is using.

For distance (Dr. Cutler's examination of March 17 and 19 and mine of March 21, 1903), alternating convergent squint of 20° to 25° (prism), homonymous diplopia of same amount, but can fuse images with a much weaker prism (remains of diverging power). Single vision by approximation at 29 cm. At all ranges diplopia diminishing as eyes are carried to either right or left. On March 28, 1903, deviation and diplopia for distance still 29°, but now single vision by approximation at 60 cm. and single vision by recession at 68 cm. At 1 m. homonymous diplopia diminishing to single vision as eyes are carried up, or laterally, or far down. Ignores diplopia most of the time. Heard later that after going to the country he got completely well so far as his subjective symptoms were concerned.

CASE 10. *Divergence-Paresis with Consecutive Convergence-Excess and (also probably Consecutive) Insufficiency of the R. Externus.*—F. B. M., male, aged 31. Seen Dec. 10, 1903. No previous illness of any kind. Eyes always good. No diplopia until six days ago, when as he was sitting in the theater, he suddenly began to see double. Diplopia passed off, but recurred the next day, and has been increasing ever since. No headaches nor vertigo. For distance R. convergent squint of 20° (prism) by screen test; homonymous diplopia of 25° by Maddox rod, but only 16° with the red glass. At 33 cm. screen-deviation = 10° (prism) = 5° actual deviation; at 15 cm. screen-deviation = 0° actual deviation. At

1 m. and 5 m. homonymous diplopia diminishing greatly in looking to the left; diminishing slightly or remaining the same in looking to the right. Slight vertical diplopia (R. hyperphoria). Rotation of each eye outward at least 45°, but R. not quite as good as L., and in looking to the right both eyes make nystagmoid twitchings. In passing from the position of eyes-left to eyes-front, L. eye evidently moves faster than R.; this faster movement of the outer eye not noticed in passing from eyes-right to eyes-front. Projection normal for R. eye when directed either to right or left, and for L. eye when directed to left. Pupils equal and reactions normal. Knee-jerks abolished.

After taking large doses of potassium iodid (up to 60 grains t. i. d.) began to improve in about two weeks. When seen in March, 1904, has prism 4°, base out, each, for distance. These rest eyes, but does not use them much. No spontaneous diplopia for three weeks. Now shows at 5 m. deviation =9° (prism) =4.5° actual deviation; at 27 cm. deviation = 10° (prism); 14 cm. deviation = 0°. For distance homonymous diplopia changing to single vision. In eyes-right, deviation = 14° (prism). In eyes-left, deviation = 5° (prism). Movement of R. eye outward slightly limited.

At 75 cm. slight homonymous diplopia, noticed especially in right half of field, although it is less in amount in eyes-right than in eyes-front.

Here there was evidently a consecutive convergence-excess and also a (probably consecutive) insufficiency of the R. externus.

Since the above article was written the following additional case has been observed:

Case 11. *Divergence-Paresis Probably Consecutive to a Paralysis of the Abducens.*—C. Y. K., male, aged 47. Fifteen years ago severe attack of articular rheumatism; had some eye trouble then, which caused him to miscalculate distances and for which he used prisms, base out.

Just two months ago sudden attack of blurring of sight and diplopia, with some uncertainty of gait, but no marked diplopia. Is confident that at that time diplopia increased markedly when he looked to the right.

Took large and increasing doses of sodium iodid, and diplopia nearly or quite disappeared, even for far distance. It has, however, recurred for the last week or two. He has himself noticed that the diplopia is present mainly when he looks at distant objects, and is nearly or quite absent in near work.

Two days ago, without warning, sudden severe attack of vomiting and diarrhea, which led him to discontinue the iodid.

Status Præsens.—Exterior and interior of eyes normal. V. = 15/15 each. R. strabismus convergens; deviation by screen =

24° (prism); screen deviation same whether correcting prism is put before right or left eye (i. e., *primary exactly = secondary deviation*). Homonymous diplopia of 25° (prism) for distance, *diminishing as test-object is approximated* to the eyes, until at a distance of 12.5 cm. from the eyes both the diplopia and the screen deviation become 0. With test-object at 3 feet, homonymous diplopia of 15 inches, *diminishing* moderately as eyes are carried to right and markedly as eyes are carried to left. Rotations of each eye normal in all directions. In particular, there is not the slightest limitation of outward rotation in each eye.

Here, if we can judge from the history, there was at the outset a paresis of the right externus, but the picture that is now presented is that of a pure divergence-paresis. Whether the slight pathologic convergence that he had fifteen years ago was due to the same cause or not is, of course, uncertain.

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PARALYSIS OF THE UPWARD MOVEMENTS OF BOTH EYES.*

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PHILADELPHIA.

The following case is of interest not only because of the rarity of the condition, but because of unusual features in the symptomatology:

A. S., butcher, came to St. Mary's Hospital Nov. 30, 1904, with the following history, as culled from the notes of Dr. William G. Spiller and my own:

On the evening of the 29th, after returning from the theater, on attempting to arise from a chair, he became very dizzy. After resting for a time, he went to bed and slept soundly until the following morning. Upon trying to read the morning paper, he saw double and the sight seemed foggy. There was no diplopia for other than objects held at reading distance. The day previous to the attack he had complained some of nausea. One year ago he had an attack of pain in the back, with some headache, confining him to bed for two days. No urinalysis was made at the time. The headache has persisted with a "kind of heavy feeling in the front of his head." He has no pains in his limbs, except in winter time. He has had rheumatic pains in his hands, and for a week has had pains in the lumbar region. His appetite is poor and he has eructations of gas. He drinks and smokes to excess. He has lost neither weight nor strength. He is the father of six children. His wife, who is dead of phthisis, had one miscarriage during an attack of typhoid fever. One child has died of phthisis.

The patient sits with his head thrown slightly back. The position of rest of the eyes is a little below the horizontal plane, with apparent retraction of the upper lids. Upward movements of both eyes either separately or conjugately is entirely abolished. Lateral conjugate movements are full but nystagmic. Convergence is weak, very unsteady and accompanied by tremor of the inferior fibers of the orbicularis. The width of the right palpebral fissure is 10 mm. and that of the left 11 mm. The iris of the right eye is prompt to light, that of the left somewhat sluggish; both are prompt to convergence. Vision of the right eye is 6/IX pt. and that of the left 6/XII pt. Ophthalmoscopic examination shows in

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* Read before the Section on Ophthalmology of the College of Physicians of Philadelphia

O. D. an opaque band in periphery of lens, veins dark and slightly distended; arteries a trifle smaller than normal; disc nearly round, red-gray, and nasal edges slightly prominent. The left eye shows the same general appearance, but the disc is not so gray as that of O. D. Diplopia can not be elicited. The fields for form and color are greatly contracted. The urine contains considerable sugar.

The notes of Dr. Spiller's examination are as follows: Hearing in each ear for watch is excellent. Masseter muscle contracts well on each side. No involvement of the facial nerve on either side. Sensation for touch is normal in the face, hands and lower limbs. Grasp of right hand is excellent; the left hand is on a splint on account of an injury to the wrist. Biceps and triceps reflexes of each upper limb not distinct. Patellar reflex is weak on each side, but this probably is because it is impossible to get the man to relax his lower limbs. Gait and station are normal with eyes open or closed.

Dr. Spiller's note to me stated that he was unable to find any signs of disease of the nervous system further than those observed in the eyes. He says: "I think that he has some vascular lesion, probably a small hemorrhage in or near the corpora quadrigemina, and that alcoholism has been the chief cause, as it is usually of the polioencephalitis superior of Wernicke."

On the 11th day of December, there was noted a marked return of power in the elevators. Three days later he first complained of vertical diplopia, and the upward movement of the left eye was found to be not as full as that of the right, and a study of the images proved this limitation to be due to greater weakness of the left superior rectus muscle.

On December 29 all the movements seemed full, but with a prism placed horizontally before one eye the weakness of the left superior rectus could still be demonstrated.

On January 11 the upper edge of each disc was still prominent and the fields contracted. Vision equalled 6/IX and 6/XII.

According to Poulard the following is the nerve mechanism of associated movements: The nuclei or the origin of the nerves; coordinating centers which regulate these associated movements; extra nuclear centers, apparently charged with the regulation of reflex binocular movements; supranuclear centers which preside similarly over the association of voluntary binocular movements; and the cerebellar centers, whose function probably is to maintain the relationships and ensure the equilibrium of the visual axes.

Kornilow states that a symmetrical degree of involvement of the muscles points strongly to a peripheral lesion, although a lesion involving the nuclei, as well as the co-ordination center, might occasion a difference in the degree of paralysis, the involvement of the nuclei disturbing the symmetry which would result from a lesion of the conjugate center alone.

When the case first came under observation, there was nothing illogical in considering the lesion to be in or about the corpora quadrigemina, or, more specifically, one involving the co-ordination center. The course of the case with the late appearance of vertical diplopia and the subsequent persistence of paresis of the left superior rectus made this assumption scarcely tenable, unless we looked on it as an instance of the mixed type of Kornilow, where the lesion involves not only the center for conjugate movements, but the nuclei as well.

In view of the course of the case and consequent untenableness of a co-ordination center lesion, Dr. Spiller considers that there is a lesion near the aqueduct of Sylvius, involving the nuclei of the oculomotor nerves.

Simeon Snell has recently reported a strikingly similar case, in which vertical diplopia was present from the beginning and persisted until the time of the disappearance of the loss of upward movement of the eyes, two months later. He considered the presence of the diplopia, indicating an unequal involvement of the two eyes, rather suggested the lesion being a nuclear or basal one.

TUMORS OF THE CONJUNCTIVA AND CORNEA: REPORT OF TWO CASES.*

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PATHOLOGIC REPORT BY
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The apparent want of an accurate description of the primary origin of growths involving the conjunctiva and cornea, associated with a looseness in their pathologic as well as their anatomic classification, calls for a report of such cases. The synonymous use of the terms papilloma, fibroma, granuloma, epithelioma, carcinoma, and even sarcoma, is evident to anyone who attempts to investigate the subject in contemporary ophthalmic literature.

Case 1.—F. G., male, aged 68, came to me in July, 1904.

History.—He is a large, well preserved farmer, who has enjoyed good health. Two years ago his left eye began to annoy him, became inflamed and painful. He consulted an eye surgeon, who told him that he had an ulcer on the eye. He remained under treatment for several weeks, during which time the ulcer ruptured, following this the pain and inflammation subsided, but he has not seen with the eye, beyond an ability to perceive light. For six months he has been aware that something was growing on the eye, starting at the white spot left by the ulcer. At first it caused irritation by contact with the lids, but for the past two months it has grown so rapidly as to protrude beyond the lids and prevent their closing. There is no acute pain present now, but it has become unsightly and when the eye is moved the growth presses against the edges of the lids and keeps up irritation and annoying secretion. Examination shows a white, roughened papillary looking mass protruding between the lids, nearly circular in shape, hiding the cornea and overhanging the conjunctiva. Under cocain anesthesia I found the growth very friable and confined entirely to the cornea. The base was constricted so that when the edge was raised a ring of corneal tissue was visible all the way around, this ring being slightly broader above and below than on the sides. Enucleation was advised and performed on August 4, 1904. There has been no recurrence.

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* Read before the American Ophthalmological Society, Boston, Mass., May, 1905.

After removal the growth measured 13 mm. at the widest and 5 mm. at the highest point. The eye was placed in 5 per cent. formalin. Three months later it was frozen and bisected in approximately the horizontal meridian.

PATHOLOGIC REPORT.

The specimen consists of one-half of an eye sectioned in an antero-posterior horizontal plane, passing through the optic nerve. Antero-posterior diameter, 25 mm., horizontal 25 mm. The cornea, 12 mm. in diameter, shows a scar of a perforating ulcer situated a little to the temporal side. Attached to the cornea is a tumor 12 mm. in diameter and 3.5 mm. high, with slightly constricted base, which just reaches the limbus on the temporal side, but otherwise is entirely confined to the cornea. The surface of the tumor is white and presents a distinctly lobulated appearance. The cut surface is white and opaque, showing irregular, sharply defined translucent areas, which evidently correspond to the stroma. There are no hemorrhages or areas of necrosis to be seen. The growth has not broken through the cornea at any point. The iris is closely pressed against the cornea by the lens, which is apparently normal. The ciliary body, chorioid, retina and optic nerve also appear to be normal.

On microscopic examination the tumor appears as a thickening of the corneal epithelium, with which it is directly continuous. Within the epithelial mass are numerous rounded stroma spaces of variable size containing fibrillated connective tissue, which at the base of the tumor is found to be derived mainly from the corneal scar. The epithelial cells bordering on the stroma, always preserve the type of columnar cells seen in the basal layer of the normal corneal epithelium and Van Giesen's stain shows that these cells abut on a delicate basement membrane. In no case do the epithelial cells lose their orderly arrangement and infiltrate the stroma. From the stroma spaces peripherally, the epithelium displays the typical structure of normal epidermis, except that a keratin layer is only occasionally reproduced. The tumor is perhaps best described by comparing it to a simple skin papilloma in which the separate papillæ have to a large extent become fused together and obscured. Definite pearly bodies are nowhere present, but when keratin is produced it is at the periphery of the papillæ as in a simple papilloma. Sections stained in Mallory's phosphotungstic acid hematoxylin, show in certain situations an abundance of the spiral fibrils of Herxheimer as well as the intracellular fibrils of Kronmeyer. This stain also brings out the prickly cells with special distinctness. The tumor shows no areas of hemorrhage or necrosis, and no suppuration. The stroma, however, is considerably infiltrated with chronic inflammatory cells, as is also the subconjunctival tissue at the limbus. Karyokinetic figures are unusually numerous.

The cornea on the nasal side is normal, except that the epithelium has been replaced by fibrous connective tissue beneath the tumor. At the site of the old ulcer, however, Bowman's membrane has disappeared and the corneal stroma is largely replaced by scar tissue, which, as has been stated, continues into and forms the stroma of the tumor. The corneal scar is vascularized principally by vessels from the limbus on the temporal side, although a few vessels superficial to Bowman's membrane reach it from the nasal side also. The iris on the nasal side is not united with the cornea, but is simply held in contact with it. Here the iris stroma is markedly infiltrated with plasma cells, but is otherwise comparatively normal. At the site of the ulcer, however, it has been incorporated into the corneal ulcer, and is represented simply by a line of pigment. The filtration angle is not occluded on the nasal side, but on the temporal side is completely blocked by the root of the iris. The lens shows beginning cataractous changes at the anterior pole. The ciliary body, chorioid, and retina are normal. The optic disc seems slightly hollowed out.

Diagnosis.—Papillary epithelioma, arising from a corneal scar.

REMARKS.

The diagnosis in this case is not easy, since it is difficult to decide whether the growth should be regarded as a simple papilloma or as a malignant tumor. The only real evidence of malignancy the tumor shows histologically is in its rapid growth, which is manifested by the great abundance of karyokinetic figures. This seems sufficient, however, to warrant the view that if left to itself the tumor would have gradually taken on a more and more malignant character. At the beginning such tumors are not highly malignant, so that simple extirpation may safely be tried before resorting to enucleation. In this case it seems reasonably certain that the occurrence of the tumor was dependent upon the corneal ulcer, since it arose exactly at the site of the latter, whereas the favorite seat of such tumors is usually the limbus. An examination of the specimens in the laboratory of the Massachusetts Charitable Eye and Ear Infirmary shows that this is the most frequent type of epibulbar tumors met with at the limbus.

The history in this case as given by the patient and the condition found at the first examination as well as the microscopical report, places this beyond question as a growth starting primarily in the corneal tissues. In fact, at no time did it invade any other structures. Epibulbar papilloma most often develops from the region of the inner canthus, sometimes from the sclero-corneal limbus. Primary papilloma of the cornea is extremely rare. Parsons says the first true case reported was that of Gayet in 1879. A few others about which there is much doubt as to their exact origin have been reported. Alt, in commenting on the microscopic features of a case reported by Kipp, says, while papilloma of the cornea primarily has been reported, it seems hard to prove that they did not take their origin from the conjunctiva. He is of the opinion that the corneal tissue proper never is the origin of such tumors. Parsons is very much of the same opinion. He says it is extremely doubtful if either papilloma or epithelioma is ever truly corneal in origin. He farther says that such cases so far reported have all started at the seat of a corneal wound. Fuchs says tumors which develop primarily in the cornea are among the greatest rarities. This statement is also borne out by Weeks.

CASE 2.—P. S., German blacksmith, aged 67, came to me September 6, 1902.

History.—When a young man he had been hit in the right eye by a piece of metal that had destroyed the sight. Since that time the eye had given him but little trouble until a few months previous to his visit, when he found it getting red and inclined to tear, and his attention was attracted to a red mass growing on the eye. On examination I found an eye with occlusion of the pupil and no ability to see objects, on the outer sclerocorneal margin a flat mass of roughened, slightly raised tissue that spread up and down, apparently following the limbus, and strongly suggestive of the circumcorneal thickening found in vernal conjunctivitis. I ordered for him cocain and adrenalin drops and advised him to return to me after the first frost. Early in October he returned. The appearance had not appreciably changed. Under cocain anesthesia I excised all the mass possible, scraped the sclerocorneal margin with a sharp curette and applied trichloracetic acid to the area. After the reaction had subsided, the place looked well, beyond a remaining thickening of the new-formed tissue. I saw nothing more of the case until April, 1903, when he came again with a return of the growth. This time the cornea was involved, a small area of which just in front of the growth was ulcerated. The growth was not thick, but covered considerably more surface than when first seen. It was very friable. With a sharp curette the surface was thoroughly scraped and then the cautery applied over the entire surface. The growth quickly returned after this operation and grew more rapidly. He refused farther operative interference. In the spring of 1904 I urged him to have the eye enucleated, but he refused until the mass had become so large that it began to protrude between the lids and had almost completely covered the cornea and reached well backward toward the cul-de-sac. The growth was much darker in color than when first seen. In November, 1904, he submitted to operation. The eye was removed and the orbit cleaned out, except the conjunctiva on the nasal side and the cellular tissue on the inner orbital wall. Now, nearly six months after the operation, there has been no return of the growth.

PATHOLOGIC REPORT.

The specimen consists of one-half of an eye, with the optic disc included, which has been sectioned in an anteroposterior horizontal plane. Anteroposterior diameter of eye, 25.5 m.; horizontal, 25.5 mm. Fixation in formalin.

Attached to the globe anteriorly there is a large tumor consisting of three distinct nodules united at their bases, which involves almost the entire surface of the cornea, and on the sclera reaches as far back as the equator. The largest nodule is situated on the sclera and measures 12 mm. in diameter and 6 in height. The other two nodules are each about 9 mm. in diameter and 4.5 mm. high, one being situated on the sclera, and the other, which has a slightly constricted base, on the cornea and limbus. The surface of the cornea not occupied by the nodule is covered by a more or less uniform layer of tissue extending from the base of the latter. The surface of the tumor is white to brown in color, the brown discoloration, no doubt, being due to hemorrhage and to drying. The cut surface in general is not uniform in appearance, but is subdivided in an irregular manner by opaque white strands which are separated more or less sharply from one another by a relatively translucent substance. The cut surface also shows a number of hemorrhagic extravasations.

The cornea, 12 mm. in diameter, is not completely broken through anywhere, but at one point the growth has almost entirely replaced it, leaving only a thin layer of corneal stroma. The sclera, on the other hand, seems entirely to have escaped erosion. The anterior chamber is 2 mm. deep and free from coagulum. The filtration angle is open on the nasal side, but on the temporal side it is firmly blocked by the root of the iris, which is attached to Descemet's membrane for a distance of 1.25 mm. Along the line of union there is a thin white layer which splits into two at the point where the iris leaves the cornea, one layer following the cornea and the other the surface of the iris. The ciliary body on the nasal side is stretched forward apparently by traction of the iris; on the temporal side it appears to be normal. The lens has almost disappeared, only a thin opaque mass containing gritty particles remaining in the capsule. The chorioid, retina, optic nerve, and vitreous humor are normal.

Microscopic examination shows the tumor made up essentially of epithelial cells arranged in strands of considerable width. The strands generally take the form of convolutions, which enclose either connective tissue stroma or other convolutions. The appearance of solid tubules with thick walls is thus often produced in the sections. Here and there within the strands are typical epithelial pearls, composed of concentric lamina containing keratohyaline granules and surrounded by prickle cells. In some situations, areas of comparatively large size have undergone this keratin transformation, producing a picture such as is seen in a cholesteatoma. Sections stained in Mallory's phosphotungstic acid hemotoxylin show many of the spiral fibrils of Herxheimer and the intracellular fibrils of Kronmeyer.

The connective tissue stroma of the tumor is derived from the cornea and episcleral tissue and, except at the base, is very scanty. It consists of delicate fibrillated tissue which is almost everywhere highly edematous. Frequently it is greatly infiltrated with tumor cells and, in consequence, not sharply marked off from the epithelial strands. The blood vessels which accompany the stroma are few in number, though comparatively large in size. The tumor has no definite capsule, but is bounded superficially by a zone of complete hyaline necrosis, probably due to drying. There are many blood extravasations throughout the tumor. Karyokinetic figures and multinucleated cells are numerous. The body of the tumor is infiltrated, to some extent, with lymphoid and pus cells, while its edges are infiltrated principally with plasma cells.

The cornea is vascularized throughout, and beneath the tumor nodule is, in great part, replaced by ordinary fibrous connective tissue, which in places has been invaded by the parenchyma of the tumor. Elsewhere Bowman's membrane is intact, but is covered over either with new connective tissue or lined directly by a thick layer of epithelium extending out laterally from the tumor. Descemet's membrane is intact throughout. No trace of an old penetrating wound is to be seen in any of the sections. Except near the limbus, the sclera shows little evidence of invasion by the tumor, although an apparently isolated nest of cells is to be seen just beneath the chorioid at the ora serrata. At the limbus the tumor cells have followed along the course of the ciliary vessels, infiltrated the canal of Schlemm, the anterior portion of the ciliary body, and entered the anterior chamber. Here they grow as a thin layer along the line of adhesion between the iris and cornea. The cells then continue over half the surface of the iris as a thick, somewhat uneven layer of stratified squamous epithelium, and over

Descemet's membrane as a delicate layer 2 to 3 cells thick. The endothelium has disappeared beneath the epithelial layers.

The iris is somewhat thinner than normal and is considerably infiltrated with cells indicative of chronic inflammation. The ciliary body is edematous and its processes are atrophic. As already stated, on the temporal side the ciliary body has been invaded by the tumor. On the nasal side where the filtration angle is free, the iris is plainly exerting great traction on the ciliary body and has pulled the ciliary muscle forward and inward. The lens is represented by a thin layer of more or less degenerated cortical matter enclosed in the capsule. The other structures of the eye show only such changes as are normally found in senile eyes.

Diagnosis.—Highly malignant epidermoid carcinoma of cornea and sclera. Invasion of anterior chamber.

REMARKS.

The tumor in this case is similar to the ordinary epidermoid carcinoma of the skin, and differs from it only in being compelled to grow on a resistent surface rather than within a tissue. Its malignancy is indicated not only by the invasion of the cornea and anterior chamber, but also by the infiltration of the stroma of the tumor itself. From a histologic standpoint, there is nothing to indicate that the tumor arose from the site of an old injury. Moreover, injuries of the cornea are, of course, of great frequency, while epibulbar carcinoma is extremely rare. An interesting feature of this case is the blocking of the filtration angle on the side of the tumor only. In the absence of other evidences of glaucoma, this is difficult to explain. Possibly it was due to local circulatory disturbances in the tumor leading to an increased outflow at this point, thus "drawing" the iris against the spaces of Fontana.

The clinical history in this case shows a tumor of the sclerocorneal margin, existing for nearly three years; the greater part of this time it was small and confined to the limbus. In fact, the tissue removed at the two operations was composed of broken-down fragments scraped away with a sharp curette. The rapidity of growth did not begin until after the second removal. The probability of this growth being purely papillomatous in its original formation is great, since the tendency in papillomatous growths to take on malignancy has been noted by Bilroth and emphasized by numbers of others, this being especially true in those with a history of rapid growth and those prone to recur after removal. In fact, Johnston, in a study of papillomatous growths of the cornea and conjunctiva, could find only 32 cases of papilloma reported in which a reliable microscopic examination had been made. He thinks this due to the fact that sooner or later such growths degenerated into malignant epithelial neoplasms.

A study of these two cases suggests a number of points that may be emphasized. Both occurred in men late in life. Saemisch, in Graefe-Saemisch's hand-book, says that in 24 cases all but 2 occurred in males. Another interesting fact is that the majority of cases of epithelioma reported have occurred in eyes that have been injured, usually a penetrating wound. In a study of 67 cases Panas locates the origin of the growths as follows: On the temporal limbus in 41 cases, on the nasal limbus in 17 cases, on the lower limbus in 1 case, on the upper limbus in 2 cases, not stated 7 cases.

In 44,719 carefully recorded eye cases at the Massachusetts Eye and Ear Infirmary, 6 cases of epithelioma were observed at the corneal limbus.

I submit that both cases were primarily papillomatous in character. The first occurred in an eye injured by a corneal ulcer and sprung from the scar of the ulcer. It was removed before it degenerated into a more malignant form of growth. The second case should have been enucleated after the first occurrence had the consent of the patient been obtained.

The only clinical appearance which seems to be of value in definitely deciding whether such growths at the limbus are malignant at their inception is the manner in which they invade the corneal tissue. If the growth is intimately incorporated in the corneal tissue, with a tendency to ulcerate as it progresses, the malignancy of the growth is assured, and, as shown by Lawford, enucleation of the eye is the safest procedure. If, on the other hand, the growth simply overlies the cornea or is loosely attached to the corneal epithelium, it may safely be excised. If this has been thoroughly accomplished the tendency to recurrence is not great.

Writers seem to differ very much on the question of penetration of these growths into the interior of the eye, this unquestionably being due to different observers having studied histologically different characters of the growths. Panas says tumors at the limbus resist penetration for a long time, this resistance to encroachment on the interior of the globe continuing even after one or more removals of the growth. Adamuk says tumors of the sclerocorneal margin fortunately have very little tendency to penetrate the globe.

On the other hand, Fage asserts that, while most observers have stated that epitheliomata of the limbus shows no tendency to grow inward, he is convinced that certain forms show this tendency to an extreme degree.

Parsons says epitheliomata at the limbus may penetrate the interior of the globe; when they do so it is along the perivascular and perineural lymph spaces of the corneoscleral junction, never elsewhere. If, however, the growth is entirely corneal it never penetrates that structure.

PRIMARY MELANOTIC SARCOMA OF THE EYELIDS.*

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BALTIMORE.

Primary melanotic sarcomata of the lids are rare. In a careful search of medical literature, I have found only 23 recorded. In my laboratory work at the Presbyterian Hospital, a typical case of this tumor has recently come under my observation. For the clinical notes I am indebted to Dr. Herbert Harlan, who made the probable diagnosis of melanotic sarcoma and operated on the patient.

Patient was a male, aged 20, who came into Dr. Harlan's clinic at the Presbyterian Hospital in December, 1904. Family and past history good. His appearance indicated that there was nothing wrong as regarded his general health. There was no evidence of tuberculosis or syphilis. About a year before, he had noticed on the lower lid of the left eye a small, dark spot, to which he had attached no significance. Shortly before coming to the hospital, he had observed that the spot had been increasing in size and had thought it best to have it examined. Examination of the eye revealed about the center of the left lower lid between the skin and the conjunctiva, a small, rounded swelling, not painful on pressure. The skin over the mass was freely movable and through it a dark shimmer could be seen. On retracting the lid the same pigmented shimmer was visible through the conjunctiva. There were no signs of ulceration. From the pigmented appearance of the growth, a probable diagnosis of melanotic sarcoma was made and immediate removal advised. A few days later a triangular piece of the lid, containing all visible pigment, was removed, the base of the triangle corresponding to the edge of the lid and involving skin and conjunctiva. The lips of the wound were drawn together by sutures.

The piece of tissue was hardened in alcohol and formalin (10 per cent.) In blocking, the apex of the triangle was placed downward, so that cross-sections could be made through the skin, the most prominent part of the tumor and the conjunctiva. The sections were stained with hematoxylin and eosin. With the low power a general survey of the specimen showed epithelium, hair follicles, connective tissue, pigment, small dots which were evidently cells and horizontal bands of tissue stained red which, with the high power, proved to be muscle tissue. The masses of pigment, which were numerous, were scattered irregularly through the section. In front they could be seen just beneath the skin epithelium, while behind they were not far removed from the conjunctiva. The cells corresponded closely to the distribution of the pigment. At some places they were seen following the bundles of the orbicularis muscle and lying between the same. At other points they approached the epithelium of the skin and conjunctiva and were scattered irregularly through the normal connective tissue. The epithelium on both surfaces appeared to be normal. With the

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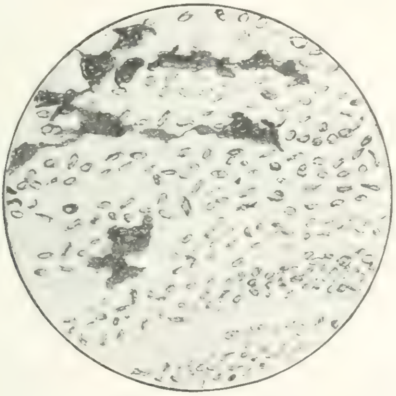
* Read before the Section of Ophthalmology and Otology of the Medical and Chirurgical Faculty of Maryland, May 26, 1905. (See Bibliography.)



high power the skin epithelium was seen to consist of squamous, oval or cuboidal and cylindrical cells from without inward, while on the conjunctival side the cylindrical processes of epithelium dipped down into the connective tissue. The connective tissue ran in different directions and sent inshoots between the epithelial processes. The striations of the muscle tissue could be clearly seen. Between the muscle bundles were thick masses of dark-brown pigment made up of small granulations, and sarcomatous cells following the horizontal direction of the muscle and sometimes arranged in nest-like formations. The cells were round, oval and fusiform or spindle in character and possessed generally one deeply staining nucleus. The nuclei of the large and small round cells were more or less round or oval, while those of the spindle cells were elongated. The protoplasm of the cells stained well. Some of the cells contained pigment. At some points the connective tissue was distinctly infiltrated by the sarcomatous cells. The diagnosis of the tumor was primary, melanotic, mixed-cell sarcoma.

The etiology of these tumors is as obscure as the origin of such growths in other parts of the body. Their development is probably more common in women than in men. In some cases there seems to be a casual relation between a pigmented nævus and the appearance of the tumor. Thus, in Enslin's case there was a clear history of a pigmented nævus from birth, and in other cases such marks have been observed before the oncoming of the malignant growth. A few writers have emphasized the importance of an injury on or about the lids as causative of the neoplasm. A striking illustration of this was the case of LaGrange exhibited before the French Ophthalmological Society in 1890. The hereditary antecedents and personal history of the patient were good. A few months before he applied for treatment, he received a severe cudgeling in the region of the left temple which resulted in a large swelling of the tissues and a bloody infiltration of the lid. The blood was absorbed slowly, and some weeks later, after the skin had regained its normal color, the patient noticed in the thickening of the lid a hard, regular and somewhat voluminous tumor. There was no pain, and vision was not affected. The tumor, at his entrance into the hospital, was as large as a small nut, freely movable under the skin and black in color. The conjunctiva was not involved. There was recurrence two years after removal. Dubar, Zehender and Van Duyse have seen sarcomata develop on the site of traumatic ecchymoses of the lid. Guibert's case was consecutive to cicatricial tissue following a burn. In Enslin's case, the patient, in stooping, struck her eye against a stool in the region of the pigmented nævus. This author believes that in all cases of melanotic sarcomata a pigmented nævus had existed before, and that some injury to the congenital mark provokes malignancy. Such marks are rare and may exist unknown to the patient.

Guillement, in his thesis, divides sarcomata into palpebral sarcomata, properly speaking, and sarcomata arising in the palpebral conjunctiva. In the first form it is common to see the tumor, in the beginning, take on the characters of a chalazion. If the chalazion is removed it promptly recurs; if left alone, it is not slow to assume excessive proportions and to present variable consistence, soft like an encephaloid sarcoma or hard like a fibrosarcoma. If, in the beginning, the tumor is movable on the tarsus and easily separated from the same, it is not difficult to diagnose from chalazion, for this is always adherent to the tarsus. When the neoplasm develops on the site of a blood infiltration, as in the cases of Dubar, Zehender and others, the fact is of importance as regards diagnosis. For a long time the skin remains movable on the surface of the tumor. Before becoming infiltrated it becomes thin and allows the pigment to shine through. The size of the mass varies from a small pea to the head of an infant. Only when the size becomes considerable does the distended skin ulcerate. At the level of the ulceration there is usually an inflammatory process due to external organisms, and these infections explain the enlargement of the ganglia which sometimes appears and which is rarely caused by an extension of the sarcomatous elements. Functional troubles consist in the interference with vision. Pain is usually slight or not present. After invading the entire lid, the tumor attacks neighboring parts, such as the jaw, the temple, the other lid, the orbit, the sinuses and even the cranial cavity. The patient grows weaker and weaker during the development of the tumor and succumbs sometimes to cachexia, sometimes to cerebral symptoms resulting from the extension of the disease.

As regards sarcoma arising from the palpebral conjunctiva, Van Duyse and Fage have remarked that this form of tumor has a tendency to be pedunculated. The neoplasm develops from the cellular tissue which unites the conjunctiva with the tarsus, and as it grows raises the mucous membrane, making a projection on the inner side of the lid. Pressure against the globe deforms it. After involving the lids, it spreads to the bulbar conjunctiva and finally covers the eyeball. The bulbus resists the invasion a long time—in some cases it is found intact under enormous tumor masses.

LaGrange claims that the pigment results from the transformation of the blood pigment or is the product of a special cellular formation. One finds both varieties in sarcomata of the lids. The first variety holds first place in the evolution of melanotic sarcoma of the lids. Enslin claims that pigment is physiologically present in the lids, tarsus and conjunctiva, and that the coloring matter of the tumor can be derived from this. Why some tumors are pigmented and others not is a difficult question to answer. Most of the sarcomata of the lids in literature are of the non-pigmented variety, the so-called leucosarcoma.

The prognosis of these tumors is bad, but probably better in the lids than in other parts of the body, because they come earlier to operation and are removed when small. Hohenberger's case was certainly cured, since there was no recurrence thirteen years after operation. Rapid recurrence is the rule. The tendency of melanotic sarcomata to form metastases must also be considered even in the smallest tumors of the lid. Several years must elapse before we can feel sure that the patient is cured as the result of the operation.

Below will be found a brief résumé of all cases of melanotic sarcomata of the lids that I have found in the literature:

1. Richet: *Mouvement Medicale,* Feb. 15, 1879. Male, age not given. Tumor of black appearance in certain points, arising from palpebral conjunctiva. Parotid glands involved. Melanotic fibrosarcoma.

2. Blanch: *Rec. D'Oph.,* October, 1882. Female, aged 56. Tumor of palpebral conjunctiva as large as a bean, irregular surface, pigmented. Enucleation of tumor. Melanotic round cell sarcoma, arising in palpebral conjunctiva and involving tarsus slightly. No recurrence three months after operation.

3. Gallenga: *Gaz. delle Clin.,* 1884. Female, age not given. Dark tumor, having its origin in the center of the ciliary border. Removal with snare. Recurrence and rapid growth to the size of a small egg. Melanotic mixed cell sarcoma, arising in tarsus and invading orbicularis and skin.

4. Van Duyse: *Ann. D'Ocul.,* 1887. Melanotic sarcoma. Male, aged 48. Tumor the size of a bean, occupying mucous membrane of lower lid visible on opening lids. Recurrence in seven months.

5. LaGrange: *Trans. Soc. Francaise D'Oph.,* 1891. Male, aged 76. Black tumor size of a pea, projecting under left upper lid. No adenopathy. Extirpation September, 1890. Some months later, recurrence and appearance of another tumor in lower lid. In November, 1894, excision of both tumors. In May, 1895, and October, 1895, extirpation of two new tumors, appearing in lower cul-de-sac. Melanotic mixed cell sarcoma arising in loose cellular tissue of lid.

6. Wilmer: *Trans. Amer. Ophth. Soc.,* May, 1894. Female, aged 30. Small tumor of six to eight months' duration. Extirpation. Melanotic alveolar myxosarcoma.

7. Zimmermann: *Ophth. Review,* June, 1894. Small black tumor adherent to skin, in external half of lid. Extirpation. Melanotic spindle cell sarcoma, apparently rising in meibomian glands. No recurrence eighteen months after operation.

8. Guibert: *Trans. Soc. Francaise D'Oph.,* 1896. Male, aged 48. Tumor of rapid development from scar of burn on lid. No hemorrhage. Great pain. Enucleaation of eye. Melanotic mixed cell sarcoma.

9. Capellini: *Ann di Ottal.* Pavia, 1898. Female, aged 61. Tumor diagnosed as chalazion. Operation. Recurrence two months later with black color, size of large almond. Removal. Melanotic mixed cell sarcoma.

10. Kastolskaia: *La Clin. Oph.,* Paris, 1898. Female, aged 31. Pigmented tumor of two years' duration. Rapid growth in last ten months. Adherent to skin. Melanotic sarcoma.

11. Thilliez: *Clin. Oph. de Lille,* 1898. Female, aged 45. Small tumor of left upper lid, resembling chalazion, size of pea. Some months after removal, three pigmented spots formed in lid. Recurrence in orbit. Exenteration, followed by rapid recurrence. Melanotic sarcoma.

12. Viasey: *Ann. di Ottal.,* Pavia. Male, aged 26. Tumor size of a small pea occupying the lachrymal caruncle. Extirpation and cauterization with the thermocautery. Melanotic round cell sarcoma.

13. Carbo Capellini: *Ann. di Ottal.,* Pavia, 1899. Female, aged 64. Black tumor size of an almond in the deep part of the lid, raising the conjunctiva, but not adherent to it. First operation followed by local recurrence. Second operation apparently curative, but followed by appearance of two small, black points on the surface of the eyeball. Melanotic sarcoma with polynuclear, elongated and fusiform cells. Sarcomatous infiltration of surrounding tissues.

14. Enslin: *Klin. Monatsb. f. Augen.,* July-August, 1904. Tumor about half as large as a lentil on lower lid. Skin freely movable and shows blue color. On conjunctival side ulcerated surface extending from cul-de-sac to edge of lid. Removal. No recurrence four months later. Melanotic spindle cell sarcoma.

15. Sommer: *Wochft. f. Therapie u. Hygiene des Augen*, Dresden, Sept. 22, 1904. Female, aged 82. Tumor size of a hazel nut in temporal half of upper lid. No history of injury or nevus. Surface ulcerated and bloody

No gland involvement. Apparently no metastases, though tumor had been growing slowly for five years. Melanotic sarcoma.

16. Black: *Ophth. Rec.*, 1901. Female, aged 60. Tumor of five or six years' duration. Two previous operations. At operation it was found that the mass involved some of the muscle eye structure and most of the mucous membrane of the globe and lower lid. No recurrence. Melanotic spindle cell sarcoma of the lower lid.

17. Fielchenfeld: *Centralb. f. prak. Augen.*, Leipsig, 1888. Pigmented sarcoma of the palpebral conjunctiva.

18. Lotin: *Klin. Monats. f. Augen.*, 1894. "Melanotic Sarcoma of the Eye Lid." Original article not obtainable.

19. Hohenberger: *Klin. Monats. f. Augen.*, 1871. "Melanotic Sarcoma of the Eyelid." Original article not obtainable.

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21. Gaudenzi: *Giornale d.R. Ac. d. med.*, Torino, 1906. "Melanotic Sarcoma of the Eyelid." Original article not obtainable.

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16. Guillement: "Sur certaines formes de tumeurs malignes des paupieres." These Paris, 1902.

17. LaGrange: "Traité des Tumeurs de L'Oeil." Vol. ii.

18. Ensiin: Klin. Monats. f. Augen., July-August, 1904.

19. Sommer: Wochft. f. Therapie u. Hygiene des Auges., Dresden, Sept. 22, 1904.

20. Feilchenfeld: Pigm. Sar. d. Conj. palp. Centralb. prak. Augen., Leipsig., xii, 97, 1888.

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PRIMARY MELANOTIC SARCOMA OF THE LOWER EYELID AND ORBIT.

NO RECURRENCE FIVE YEARS AFTER REMOVAL AND EXENTERATION OF THE ORBIT.

By H. V. Würdemann, M.D.

MILWAUKEE, WIS.

The report of Dr. Johnston of a new case of primary melanotic sarcoma of the eyelid and his review of the literature, and more particularly his statement that only 23 cases have been reported, leads me to give the clinical history of the following:

April 17, 1900, Mrs. H. C. B. of Madison, Wis., aged 60, was first seen by me on account of a large melanotic tumor of the left lower eyelid, which was first observed five years before. This had been operated on by Dr. Everett of Madison four years ago, but had recurred, and six weeks ago had been again excised by Dr. Edsall of the same city. Rapid recurrence followed the second operation. Dr. Edsall then sent the case to me. Sight failing for a year. No other significant history obtained.

Status Præsens.—The patient is a large, otherwise healthy, woman. The left lower eyelid is swollen to the size of a hen's egg, completely closing the palpebral fissure. In the center is a depressed ulcerating area, 2 by 1.5 cm., the cavity being lined with dark granulations and filled with malodorous pus, although it was dressed with iodoform and a bandage; no inflammatory symptoms present. The eyeball could not be seen. See Figure 1.

Diagnosis.—Sarcoma of lid, and advice given for a complete operation.

Operation.—April 18, 1900, Dr. G. I. Hogue assisting. Chloroform anesthesia; complete removal of lower lid, with majority of the tumor, revealed a non-inflamed eyeball, cornea and lens clear, blackish tumor tissue under the globe proceeding into the orbit, involving the mucous membrane of the lower lid, the lower portion of Tenon's capsule and much of the tissue in the orbit, extending into the upper lid at the outer canthus. Removal of a portion of the upper lid and exenteration of the orbit was then made. The eyeball being freed from orbital tissue showed a deep edentation corresponding to the portion in apposition with the tumor of the lid. The eyeball itself was not involved. The lids were partially sutured and the cavity packed with gauze, first dressing being made in three days and daily thereafter, the patient leaving the hospital in three weeks, with good granulating surface. Dr. Edsall cared for the further treatment, the patient being last seen by me April 1, 1901. The orbital space was lined by epithelium which has grown in from the skin of the lids.

Macroscopic Examination.—The eyeball, although irregular in shape, is apparently free from tumor tissue. The lower lid contains most of the tumor. A triangular section being taken out for microscopic examination shows a blackish, very firm infiltration between the skin and conjunctival surfaces. This is so deeply colored that it shows through the skin and conjunctiva. The tissue removed from the orbit evidences tumor infiltration. Several lymphatic glands are enlarged and of a dark color.

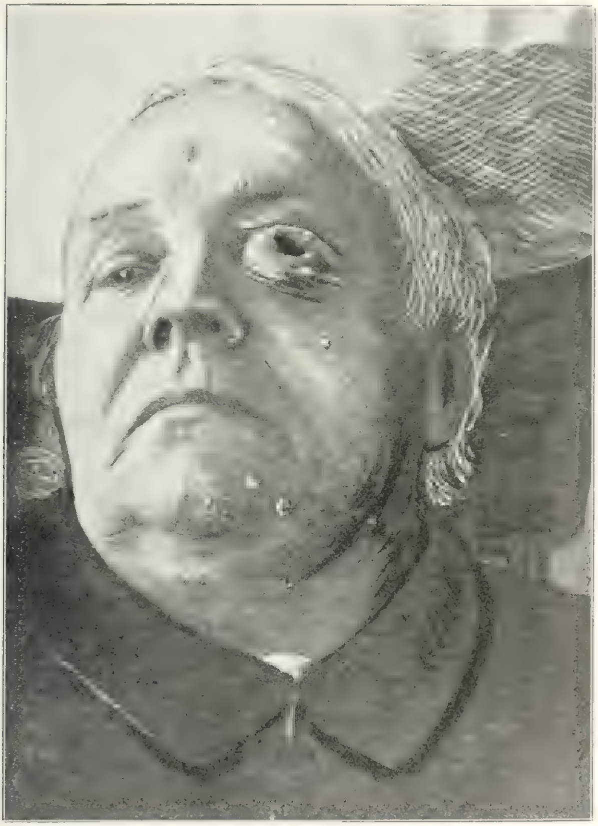

Fig. 1.—Primary melanotic sarcoma of lower eyelid. The blackish depression is an ulcerating area. The lower lid and contents of orbit were removed; no recurrence in five years.

Microscopic Examination, by Dr. G. I. Hogue.—The section was stained with hematoxylin and eosin. Under the low power the epithelium presents all stages of degeneration; distributed generally in the tissue round cells are seen running in a horizontal direction with the surface. In the deeper and muscular layers the great amount of dark-brown pigment, to a large extent, obscures the tissues normally present. Looking at the specimen with a high power, large, round sarcoma cells, with a few spindle-shaped cells, are found. Within and surrounding the lumen of blood vessels the same cells are observed. The cells are stained a very dark-brown, some even appearing black in color. In the deeper and muscular layers the pigment is a decided brown and is profusely scattered throughout the tissues in very irregular formation.

Diagnosis—Primary, melanotic, mixed-cell sarcoma.

OPHTHALMOLOGY IN JAPAN.

By Michiyasu Inouye.

UCHI-SAIWAI-CHO, TOKYO, JAPAN.

TRANSLATED FROM GERMAN MSS. BY H. V. WÜRDEMANN.

Japan has three medical faculties, one higher medical school and nine general medical schools. The localities of these institutions and the individuals holding the chairs of professors and assistants of Ophthalmology are the following:

CITIES.		PROFESSORS.	ASSISTANTS.
Toyko	(Faculty)	J. Komoto	Y. Nakaizumi.
Kyoto	(Faculty)	I. Asayama	N. Hikida.
Fuknoka	(Faculty)	Y. Onishi	
Osaka	(High school)	S. Imai	
Chiba	(General school)	R. Ogiu	
Sendai	(General school)	A. Tashiro	
Okayama	(General school)	T. Shimamura	
Kanasawa	(General school)	Takayasu	
Nagasaki	(General school)	Y. Murakami	
Kyoto	(General school)	M. Ito	
Nagoya	(General school)	M. Kako	
Kumamoto	(General school)		
Tokyo	(General school)		

We have but one academic degree, which is called "Hakushi," and which is equivalent to the title of Professor in European countries. There are two other denominations, one "Gakushi" and the other "Tokugyoshi." In the eyes of the people "Gakushi" is about the same as Doctor in Europe, while "Tokugyoshi" is a lower order. Gagushis who get their medical degrees in America or Europe, do not as a rule take an examination to practice (Doktor Examen), while Tokugyoshis, who take postgraduate work in other lands, reach the grade of Doctor.

Besides these Hakushis, Gakushis, Doctors and Tokugyoshis there is a much larger number of non-titled medicine men than all of the four classes together.

At present there are ten Hakushis (professors) in ophthalmic practice: J. Komoto, Y. Onishi, K. Kiribuchi, M. Hori, I. Asayama, Y. Murakami, Takayasu, I. Komo, M. Kako and Michiyasu Inouye.

There is only one journal devoted to ophthalmology in Japan, the *Nippon-Gankwa-Gakkwai-Zasshi* (Journal of the Japanese Ophthalmologic Society), published by Onishi in Fuknoka.

The most widely known ophthalmologists in our capital city, Tokyo, are Kono, Kiribuchi, T. Hitaka, H. Yamaguchi, T. Suda, K. Ishiguro, K. Hirota, Toyotaro Inouye, Kawakami, et al. (The author, Michiyasu Inouye, is practising in Toyko and his name is perhaps better known to Americans and Europeans.—H. V. W.) Others of prominence in other parts of the country are S. Ogata (Osaka), T. Maito (Osaka), U. Mayeda (Nagoya), et al.

Of mention among the military surgeons interested especially in ophthalmology are Hori, J. Nakagawa and A. Masugi.

Of these 29 specialists the most have studied in Germany. Besides these there are others who may be mentioned as having studied there, among them T. Toyoda, K. Ogawa, K. Hotta, et al. (The author himself was a student of Prof. Komoto and later in the European clinics, where I believe I had the good fortune of first meeting him.—H. V. W.) On this account Japanese ophthalmology is grateful to Germany.

We must finally remember those who have gone before and passed away in the last two decades, the ophthalmologists Ume, Suda, Tatsuya Inouye, Miyashita, Tatsushichiro Inouye and Seo, especially the first three, who created modern ophthalmology in Japan.

THE ANATOMY OF THE EYE ACCORDING TO THE ANCIENTS.*

By Edmond E. Blaauw, M. D.,

BUFFALO, N. Y.

HISTORY IS THE MEMORY OF SCIENCE.

> "Tout homme, fût-ce un génie, qui ne remonte pas au delà de son siècle, ressemble à un vieillard qui ne se souvient que de la veille."—J. F. Malgaigne. 1806-1865.
>
> "La science de la médecine, si elle ne veut pas être rabaissée au rang de métier, doit s'occuper de son historie, et soigner les vieux monuments, que les temps passé lui ont lègués."—E. Littre.

Deduction shows that ophthalmology is the oldest branch of medicine, for as soon as man was able to reason he found out that preservation of the organ of sight was of the highest importance to the struggle for existence. He noticed that affections of this organ mostly impaired the vision and reduced the value of the whole organism. The first ophthalmologist is said to have been Apollo—which shows the antiquity as well as the sacred character of his profession, which is not surprising, as in ancient times the whole field of medicine was in the hands of the priesthood. Next to Apollo, Athene was considered to have particular powers in this same line. The office of Athene in Egypt was filled by Isis, which power she perhaps divided with Osiris.

The treatment was that which might have been suspected from such performers, consisting in the "temple-sleep," not differing from that for other diseases. Already a distinction will be found between the praxis aurea and pauperum. Aristophanes (died 388 B.C.) describes how, after a submersion in the sea the patient went into the temple and placed his offerings at the head of his lying place, the poor resting on straw, the rich on a freshly sacrificed ramskin. He was ordered by the priest not to open his eyes. A miracle now happened as the god in person took away the offerings and examined the diseased parts of the sleeping patient. An eyewash was poured on the poor man's reversed eyelids, which acted so energetically that the patient left the temple crying and screaming. The rich patient was treated with greater consideration. The god palpated the diseased organ (head and eyes), dried the sick eyes softly and carefully with a piece of soft cloth (linen) and wrapped the whole head in a purple veil. Two enormous snakes (or dogs) trained especially for the purpose and kept in the temples, crept under this veil and licked carefully the sick eyes. After a few minutes the "snakes" left as noiselessly as they came and the patient was said to be cured. This "temple sleep" was in vogue until within the first centuries of the Christian era. The patient left a votive tablet (ex-voto) containing a description of his sufferings, the treatment and result. This faith in a direct intervention of the transcendental powers has not left the present generation, as the innumerable places of pilgrimage yet testify.

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* Read before the Buffalo Ophthalmological Club.

A fee was expected from the patient for the maintenance of the temple and its servants. The god knew how to punish his "deadbeats," as is related of Hermon of Thason, who did not keep his obligations to the temple. The god made him blind again, but on his return and sleeping in the temple he was again cured.

We now come to the second period of the history, following the division of Magnus, which is chiefly characterized by the appearance of natural philosophy beginning with Thales of Milet about 600 B. C.-250 B. C., when the Alexandrian period starts and the anatomy begins to be studied. This era was the reign of philosophic speculation and the knowledge of the different organs was sought more in a speculative way than by systematic dissection. A real, but small, increase of knowledge was made empirically, in studying wounds and accidents. The first anatomy was comparative. The knowledge gained on animals was transferred without a blush to the human eye (Aristotle, 384-322 B. C.) until the time of the great Herophilus, who dissected the human eye.

From this we can not wonder that the external parts were the best known. The brows played a particular rôle; the lids were divided in a medial and external part; the position of the eyelashes (cilii = βλεφαρίδες); the average size of the eyecleft, even the excretory ducts of the Meibomian glands were well known. The muscles of the lids were unknown, which is not strange in a time when the function of the muscles was considered so different from the present. The muscles were thought to be organs of sensation—even of the finest sensations—or they served the purpose of protection against heat and cold, or, according to Plato (427-347 B. C.) they were equalizers against the effects of blows; so they thought the motions of the lids entirely independent of volition, being as involuntary as the motions of the heart.

The cartilage in the lids was known and special care advised not to wound it in certain therapeutic measures. The conjunctiva was considered together with the sclera (=το λευκόν). The walls of the bulb itself were built by two layers (Democritus, died 361 B.C.); an external, fine and very resisting one, and an internal, spongy ones; they were called μήνιγγες, showing a descent from the cerebral membranes. We have some ground to suppose, that in the time before the Alexandrian period three coats were accepted: a thick, external, a thinner intermediate, and a very thin internal coat. The sclera was described as flesh (κρέας), which will be explained the most satisfactorily, when we know that no distinction was made between the sclera and conjunctiva. Aristotle considered it to exist of fat or tallow,[1] a consequence of the speculative tendency, as the fat of the sclera must keep the humors in the eye from coagulation. The same conception can be traced through the old Jewish to the Egyptian medicine. The cornea is distinguished by its exceptional transparency and is nourished directly from the brain. "From the brain membrane a vessel goes through the bone to both eyes. Through both vessels the finest of the sticky is transported from the brain and on account of that it forms around itself a membrane of the same nature, namely, the transparent, towards the exposed to the air part of the eye." The cornea is described as a membrane consisting of different layers. The corneo-scleral junction seems to have been considered important.

The chorioid and iris were known, but the knowledge of the chorioid was limited to its spongy appearance; of the iris the color was most important. Empedocles (490-430 B. C.) opposed the lighter color of the Northerner to the darker of the Southerner, and declared that the darker color came because the eye contained more internal fire—the essence of vision; the lighter eyes contained less internal fire. Aristotle, however, though that the darker iris came from a larger percentage of water in the eye; light ones contained less water. Aristotle observed that the iris of the new-born was light in color—this found its explanation in their weak constitution.

The cornea and iris were considered to be in apposition. It was known that the normal pupil (oldest name= κόρη) should be round and movable and more or less in the middle of the iris. Its normal black color came from its deep situation and black membranes which covered it. (In the Talmud the pupil is called "Ischon"—little man.)

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[1] Vide. Psalm 73, v. 7: "Their eyes stand out with fatness: they have more than their heart could wish."

As already mentioned shortly before the Alexandrian period a third internal very thin coat was known, the ἀραχνοειδής—the retina. A topographical knowledge of the contents of the bulb was yet absent (=το ὑγρόν); the difference in consistency was thought to be a postmortem phenomenon, and unimportant, resulting from contact with the air. Hence Hippocrates (460-356 B.C.) had no definite idea of the lens, although in some cases it must have been seen.

The optic nerve, as we know it, was unknown to the philosophers. Alkmæon,[2] is said to be its discoverer, but closer investigation shows that it can not have been our optic nerve. Alkmæon seated the soul in the brain and was obliged to let the sensations of the different senses reach the brain, so that the soul would take notice of them. Therefore, he surmised that all senses are connected with the brain by hollow canals and so a tubeform connection should exist between the brain and eye (πόροι = canal = optic nerve of Alkæon). Even if he should have made dissections and found the optic nerve he could never have accepted it as such, as he depended on his philosophical system, and he was looking for a hollow tube in which the sensations, as water in a pipe, could move up and down.

Diogenes of Apollonia (about 430 B.C.) thought that blindness may result from blocking up of the lumen of the canals. According to Hippocrates (460-356 B.C.) more than one of these connections should exist between the brain and the eye. Aristotle accepts three tubes (ποροι), the largest and the intermediate go to the cerebellum, the smallest goes to the brain itself, lying closely to the nose. Both the medium-sized ones of each eye unite. This seems to represent the chiasma. Aristotle considered this union to be a place of origin of vision, and makes it at the same time responsible for certain motions of the bulb—for the simultaneous lateral movement.

The tears came directly from the brain. This was considered a gland, whose chief function was the regulation of fluids circulating in the body. Plato, who accepted a fire within the eye as the principle of vision, said the tears come through a mixture of this fire with the fluids present in the eye. So the tears are produced within the eye itself. Hot tears were normal, produced in the act of weeping; cold tears were found with ocular diseases and had a more or less unfavorable prognosis.

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[2] Alkmaeon of Croton was still a youth, when Pythagoras was already an old man. He wrote only one work, "About Nature." περὶ φυσεως: this was the first medical treatise. Alkmaeon was the "True Father of Medicine." E. Fuchs. "Geschichte der Heilkunde bei den Griechen."

The wars of Alexander (356-323 B.C.) had a most important influence by bringing peoples in contact who hardly knew of each other's existence, and by creating a new center of civilization in the metropolis, Alexandria. His successors favored the culture of science and delivered those to the physicians upon whom the sentence of death was pronounced. The names of two, Herophilus (the discoverer of the Torcular Herophili) and Erasistratus (330-250/240 B.C.) have come down to posterity. Herophilus is said to have performed 600 dissections, many of them done on the living being. Dissections of animals were frequently made. Only a few fragments of this Alexandrian science have been preserved. In this period, ending with Galen (about 150 B.C.) two Roman physicians, Celsus and Rufus, left parts of their works to us. The consequence of this new spirit was a sounder understanding of anatomy, undermining the notions of the philosophical deductions. After Plinius (23-79 A.D.) a part of the soul, chiefly pride, was supposed to live in the brows. Celsus (25-50 A.D.) did not develop our knowledge of the bulb very much, while Rufus' ideas agree with ours in general (end of the first and beginning of the second century). He distinguishes conjunctiva, cornea, sclera, iris, lens capsule, chorioid and retina. He describes a membrane (= ἐπιδερμίς) covering the white or outer coat of the bulb. This membrane swells under certain circumstances, becomes red and freely secretes. This membrane covers the whole bulb (including Tenon's capsule). Sclera and cornea together are the outer coat of the bulb. Rufus says the cornea is thinner than the white, thick sclera; its composition is better known (membrana callosa, Plinius). Celsus describes the sclera as lengthening backward and becoming thinner, going through an opening in the skull and blending with the brain-membranes. The cornea may be split into different layers. The chorioid with the iris are described by Celsus as χορ[ι]οειδής, while Rufus gives the additional name of ῥαγοειδής to the iris. Celsus mentions a very large posterior chamber, does not mention an anterior one, so we may conclude a contact between iris and cornea. Herophilus compares this membrane with a grapeskin, smooth outside, where it coheres with the cornea, rough at the opposite side. According to Celsus the chorioid becomes thinner backward forming at the end with the sclera a firm connection, which goes together to the membranes of the brain. Different hypotheses to explain the black pupil existed.

After some the blackness came from the fluid contents of the bulb, as deep waters always appear black. Some considered the pupil the beginning of a long canal, which becomes constantly deeper on its way into the interior of the brain; narrow, long canals always show a dark opening. Others considered the black color of the chorioid to be the cause of the black pupil, as this black chorioid formed a shadow and darkened the lens. Cassius (second century A.D.) combines causes, and thinks that the fluid covering the pupil, as well as the narrowness of the pupil, together make the pupil appear black. He also noticed that the pupil became narrower by looking at small objects (first mention of accommodation).

The ciliary body and the corneo-scleral junction were well known and considered to form one organ. Celsus describes the retina as a tunica tenuissima, which forms a cavity filled with corpus vitreum. In the anterior portion of this cavity, directly behind the membrane, lay the lens. According to Rufus the retina originates from the optic nerve, expanding forward and flatting anteriorly to admit the lens with its capsule. He fancied that the retina entirely enclosed the vitreous body and came in contact anteriorly with the coat covering the lens; it is very thin and soft. The name ἀμφιβληστροειδής given by Herophilus shows us that the Alexandrian school knew the existence of blood vessels in the retina. Only we find the lens capsule mentioned by Rufus as covering the anterior and posterior sides, in contact with the posterior side of the iris and going backward with the retina which surrounds entirely the vitreous body. A posterior chamber can not exist. Some explained the lens capsule as a coagulation product.

The aqueous humor was known at this time, but it was placed behind or in front of the iris. As described above Celsus does not describe an anterior chamber, with the eternal coat another is connected. This later is perforated in the middle, and "behind these an empty space exists where the pupil lies." Rufus speaks of a cavity between cornea and iris filled with water, which is formed by recession of the iris from the cornea, with the corneo-scleral junction as the margin. We may surmise that he thought the plane of the iris convex, which means that he considers the position of the lens, after the aqueous humor has flown off, to be normal, but then the anterior chamber can not be deep. Rufus never mentions a posterior chamber, while Celsus does, even accepting an abnormally large one. Even in the middle ages, Ryff describes a posterior chamber filling half of the anterior portion of the bulb.

This anatomical image was the fruit of speculations based upon the humoral pathology, which needed a large space behind the iris in which the hypothetical development of cataract, from coagulating of mucus, could take place. Celsus must have considered the corpus vitreum to be small, Rufus on the contrary very large. (In the middle ages the lens was thought to be within the vitreous body.)

The aqueous humor was known to be a separate part of the bulbar contents; some considered it the source of the tears. The lens was known, different ideas reigned about its form and position. Celsus considers it the seat of vision. Herophilus and Erasistratos taught that the nerves were conducting organs, they already distinguished motor and sensory nerves. The sensory nerves are hollow (Erasistratos) and originate from the meninges, while the motor nerves come from the brain, and some from the cerebellum. However, they were considered of the same value as the tendons and fragments (νεῦρον). A direct nerve connection between the eye and stomach was supposed, as no eye could be removed without vomiting (Plinius). (In the Talmud: a degenerated eye is dangerous to life, as the vision is in contact with the pericardium.) The external muscles were known.

A canal which conveys the tears seems to have been imagined to extend from the inner ocular canthus in the region of the caruncula lacrymalis to the palate, passing next to the large ocular muscles. The tears influence the eyes as a purgative would the whole body, that is, clearing and depleting; therefore, those drugs which produce tears strengthen the vision (onions were thought beneficial to the eye, as they produce tears).

Celsus describes a superficial system of vessels between the scalp and the skull, the temporal arteries were very important, and a deeper system between skull and meninges; they both take care of the eye.

Galen (130-201)[3] distinguishes six layers in the eyelids:

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[3] Galen was born in Pergamon in the year 130 A.D.: his father was an architect and well up in methematics, astronomy and logic. His father taught and sent him, 14 years old, to the school of the philosophers in Pergamon. Later he studied in Smyrna and Alexandria. In his youth he was often sick, but in good health from his 28th year: In 158 A.D. he became physician to the gladiators in his home city; he went to Rome in 163, remained there till 166 A.D. From 167-169 A.D. he was home again, but was recalled to Italy to combat the plague. In his old age he stayed in Pergamon and finished his extensive literary work. His system of medicine reigned as powerful as Aristotle's Philosophy, for some fifteen centuries. Galen's anatomy was used till Vesal (1543); his anatomy of the eye till J. G. Zinn (1755). (Descriptio oculi humani iconibus illustrata, Göttingen). Galen was overvalued in ancient times, it is modern to underrate him (Fuchs). Paracelsus gave the first blow to his omnipotence (1527), Harvey gave it a more definite one with his discovery of the circulation of the blood (1628), but many of his opinions and explications are held still to-day.

(1.) The first layer, the skin of the lid is the direct continuation of the skin from above and below and ends at the lid margin.

(2.) The second layer, directly continuing the periosteum of the frontal and the maxillary bones. The upper one goes under the first layer to the lid margin, curves around and forms our conjunctiva palpebrarum, continuing to the fornix. From here it is continued on to the bulb and divides in two functionally different parts. The anterior goes forward to the corneo-scleral junction, where it coalesces with the sclera; the posterior, which covers the external muscles and accompanies them to their origin.

(3.) The third layer appears only on the upper lid, directly under the periosteum, the muscle and aponeurosis layer (the under lid is perfectly immovable). The muscles of the upper lid are covered with fine membranes and are connected with the cartilaginous part through a tendinous spreading. Galen supposed that wherever active motion exists a pair of muscles must be present, namely a flexor combined with an extensor. So in the upper eyelid he admitted two muscles, the one which pulls the lid down and closes the eye, springing from the inner canthus and spreading out towards the middle, and the levator commencing in the middle, spreading to the temporal side.

(4.) The fourth layer existed as well in the upper as in the under lid = ταρσος, the cartilaginous portion. Its function is threefold: (a) It maintains the convexity of the lid; (b) it forms a solid base for the eyelashes; (c) it gives support to the attached muscles.

(5.) The fatty layer, which keeps the tarsus soft and in good condition, is a protection to the tarsus.

(6.) The periosteal sheath of the inner-lid surface; the conjunctiva palpebrarum. The eyelashes grow directly from out the tarsus in a straight line.

The conjunctiva bulbi is the continuation of the periosteum, but was not separated as yet from Tenon's capsule, adhering to the στεφάνη or ἶρις with the bulb.

The sclera is the direct continuation of the dura mater, going out of the brain as the external sheath of the optic nerve and differentiating itself afterwards into the sclera. Where the optic nerve penetrates the bulb a number of small openings (vessels? or lamina cribrosa?) will be found. The visual substance (αὐγοειδές πνεῦμα) streams directly from the brain into the eye. At the στεφάνη it goes over into the cornea. The cornea is the thinnest at its midpoint, it is a very fine, but dense membrane. Galen accepted a layer-like structure.

The chorioid is blackened internally, a direct continuation of the pia mater, very rich in blood vessels, which explains the name χοροειδής because, similar to the chorion, it was thought to have a peculiar nutritive function. It had to nourish and protect the underlying retina and had some functional connection with the lens. It grew together with the lens through an outgrowth.

The iris is the direct continuance of the chorioid; goes from it at the στεφάνη̄. Its posterior side is spongy, keeps constantly moist and nourishes the lens and protecting it by continuous contact from rough, painful pressure and rubbing. With its black color it prevents the dispersion of the αὐγοειδὲς πνεῦμα and reflects it in the pupil. The iris also provides the nourishment for the cornea. The posterior part of the iris in its entire extension is in contact with the anterior surface of the lens. The mobility of the iris is produced by collection of the pneuma, a vapor-like substance which streams in the interior of the eye through the optic nerve. It is formed chiefly in the pupil and enlarges this mechanically. When one eye is covered this substance leaves this eye and goes over into the other through the chiasma—consensual pupillary reaction. The different sizes of the pupil depended on the difference in color. The corpus ciliare = στεφάνη, ἶρις, had already been described by Rufus. All layers and other soft parts of the bulb are here grown together, protecting the eye from trauma or dislocations that may arise from contusions.

Seven circles were formed by this growing together of the different layers (ἶρις): (1) A growing together of the continuation of the frontal periosteum with the aponeurosis of the external muscles; (2) of this aponeurosis with the sclera; (3) of the sclera and the chorioid; (4) of the chorioid and retina; (5) of the chorioid and with the lens; (6) of the retina with the vitreous body; (7) of the retina with the lens.

The retina is a part of the brain, it surrounds the vitreous body as a net, except its anterior plane. The retina stops in the region of the ciliary body and grows together partly with the lens, partly with the ciliary body. The abundance of vessels is specially noticed. Cobweblike fine fibers, which give nutrition, connect the chorioid with the retina. The retina connects the lens (the visual organ) with the optic nerve and the brain and nourishes the vitreous body; it had also some nutritive connection with the lens. The anterior lens capsule is described as a very fine membrane, which surpasses all mirrors in brightness and smoothness. The image of the pupil would form in it as in a mirror. The posterior surface of the lens has no covering of its own.

The lens is a white, glittering, clear body, similar to crystal or ice, its posterior surface globular, the anterior flattened, which favors the blending with the ciliary body. The lens lays directly behind the iris, as we find it after puncture of the anterior chamber. The chorioid processes keep the lens in position and are grown together with the lens in one circle. The lens gets its nutrition from the vitreous body κατὰ διάδοσιν = thorough endosmosis. It is the chief functional part of the eye.

The consistency of the vitreous body is thicker than blood. It is nourished by the retina κατὰ διάδοσιν, as it is without blood vessels. The corpus vitreum is a round substance with half-globular impression in front for reception of the lens.

The aqueous humor is a thin, transparent fluid similar to albumen. This fills the cavity between the cornea, iris and lens. It was very important for the existence and normal function of the eye, keeping the lens the right distance from the cornea, so that no contact (collision) can happen. At the same time the aqueous humor keeps constantly moist the posterior surface of the iris and the lens. This aqueous humor softens the strength and intensity of the outward light, so that the lens can bear the splendor of the incoming light.

A posterior chamber could not be detected, as no fixation methods were known; so the lens was in entire contact with the iris. Still the posterior chamber was necessary for explaining the visual act. The visual substance could only reside in the pupil, occupying its entire space. A thin layer of watery fluid was necessary between iris and lens to preserve their undisturbed existence.

The optic nerve is the best organized nerve of the whole body and is divided in three parts:

(1.) The orbital part is considered as condensed and solid, but not dried cerebral substance; however, it should not be really harder than the brain substance. Its external part is harder than the inner, so that it acts better against disturbances. The optic nerve should be softer than all other nerves in the body, especially the motor nerves, because sensory nerves are soft, the motor nerves hard. The nerve possesses a canal in its center, which runs from its source in the brain to its exit in the bulb.

(2.) In the chiasma (second part) both canals form one cavity together. A continuous stream of spiritual fluid (πνεῦμα ψυχικόν) passes from the brain to the eyes. The optic nerve penetratess the bulb in its posterior central part. Two sheaths surround the nerve, the external, which is the continuation of the dura mater, goes over into the sclera; the internal, the continuation of the pia goes over into the chorioid. A total crossing of the optic nerve is repudiated, they only meet so that both central canals can form a common cavity together. In it (chiasma) an exchange of sensations of each optic nerve takes place, or as the source of all sensations points to a common place of origin, so the final station of the visual act is the chiasma.

Galen himself thought that a strengthening and increase follow the πνεῦμα ψυχικόν to one eye, as soon as the other eye has ceased its function, by transmission of the πνεῦμα, which otherwise would go to this second eye. The proof was found in the enlargement of the one pupil after closing of the other eye. This dilatation occurs mechanically through an increase of the πνεῦμα, and next the union of the optic nerves guarantees undisturbed single vision, because this chiasmatic union keeps the position of the optic nerves steadily in one plane.

(3) The cerebral part of the optic nerve is now described for the first time. The optic nerve arises from the front part of the lateral ventricle.

The four recti muscles originate from the posterior part of the orbit. They form together one common tendon, which grows together at the στεφάνη with the other parts of the bulb. The two obliques originate in the region of the inner canthus and proceed toward the outer canthus; their function is equivalent to our idea of torsion.

The seventh muscle, musculus choanoides or retractor, has its insertion at the posterior part of the bulb under the recti (a discovery consequent on comparative anatomical studies); it secures the position of the bulb; it protects the optic nerve and plays a part in the accommodation. Even to Vesal's time (1514-1564) and later we find this muscle described as occurring.

The caruncula lacrymalis is a fleshy body, which directs the tears to the nasal duct. This duct opens directly in the conjunctival sac, and is covered by the caruncle. The canaliculi lacrymales communicate directly in the nose; they form an apparatus for regulating the amount of moisture of the conjunctival sac. Excess of moisture is carried off through them; if the conjunctival sac be not moist enough, then the puncta lacrymalia give off moisture and prevent dryness of the eyes.

Two glands which excrete moisture (ὑγρον) in the eyes through visible openings are present in the orbit, a superior and an inferior.

Their chief function is to secure motility of the lids. The tears (in weeping) are directly excreted from the blood.

The oculomotor nerve is the second, innervating all the muscles and penetrating the orbit through a separate opening from that of the optic nerve. The forebrain is the cerebral origin.

The vessels, which chiefly nourish the intrabulbar organs, come with the chorioid from out the brain, while those for the anterior part of the bulb come from the forehead with the periosteum which becomes the conjunctiva bulbi.

We received during the last years two very important books about the history of ophthalmology from the Germans, one by Prof. Hugo Magnus, "Die Augenheilkunde der Alten," Breslau, 1901, which I have chiefly followed, and the other by Prof. J. Hirschberg, "Geschichte der Augenheilkunde," in the second edition of Graefe-Saemisch Handbuch der Gesamten Augenheilkunde. Notice has been taken of the "Handbuch der Geschichte der Medizin," begruendet von Puschmann, herausgegeben von Neuburger und Pagel, erster Band, 1902, and Prof. Hugo Magnus, "Medicin und Religion" Heft 1 of the "Abhandlungen zur Geschichte der Medicin."

Abstracts from Recent Ophthalmic Literature.

AMBLYOPIA.

A Case Simulating Toxic Amblyopia.—Pancoast, J. William, M.D., Philadelphia. (*Ophthalmic Record,* May, 1905.) Male, aged 19 years. Consulted the author in 1896. O. D. V. 5/45. O. S. V. 5/150, not improved with lenses. Temporal quadrants of nerve heads pale. Central scotomata for red and blue. The use of tobacco, alcohol or toxic poisons of any kind were excluded. The usual treatment of strychnia and iodids was given, without any improvement. It was now discovered after some effort that for three years past the patient and a French nurse had been indulging in excessive sexual relations. This was stopped, and the strychnia and iodids continued with marked improvement in vision in six weeks' time. He was discharged with practically normal vision. A few years later he contracted syphilis in Japan, and it is said that his old ocular condition returned and resulted in total blindness, and in November of that year (1904) he died of supposed gumma of the brain. The necropsy showed a large fibroid growth, but no sign of a gumma. The author does not believe the fibroma had anything to do with the ocular difficulty of eight years before. M. B.

Two Cases of Uremic Amblyopia.—Pons, y Marques, Mahon. (*Archives de Oftalmologia,* March, 1905.) The author describes two cases. The first case a man 29 years old, abstemious as to liquor and tobacco; chancroid three years before; polyuria, twitchings, slight edema of the lids, cephalalgia compelling him at times to cease work. Condition became gradually worse and visual disturbances appeared; five days before sudden and marked reduction of vision. Lids slightly edematous; pupils somewhat dilated, but active; media and fundi normal; vision fingers at one-half meter; concentric contraction of the visual field; no central scotoma or color changes. The urine contained an enormous quantity of albumin. Diagnosis, amblyopia uremica. An exclusive milk diet, small doses of K. I. and rest restored the vision to normal at the end of a week. The second case is very similar to the above. Sudden reduction of the vision ($V=1/8$) three days before with normal fundus and media in a 56-year-old man, who, when a child, had lost the left eye from a penetrating wound. Urine negative as to albumin or sugar. Diagnosis held in reserve resting between amblyopia uremica and glaucoma; collyrium, eserin and pilocarpine, K. I., and rest for the eye. During two months vision now better, now worse, later appearance of metamorphopsia—the lower part of images being distorted. The latter part of August lumbar pains, diminished urine, twitchings of the face and extremities, dyspnea, general edema, slight cephalgia and prostration. Urine now showed albumin. After 20 days' treatment—rest in bed, milk diet, diuretics, etc.—the visual field became normal and vision improved to one-half.

"Uncomplicated uremic amblyopia, i. e., with no visual fundal changes and depending solely on cerebral intoxication from uremic poisoning, although admitted by some authorities, Panas, Abadie, Lagrave, A. Terson, and others, is very rare, especially when compared with the frequency of retinitis albuminurica." The author lays claim to the first case of metamorphopsia, due to uremia, that has been reported. H. M. F.

ANATOMY.

Anatomical Description of Ophthalmoscopically Visible Opaque Nerve Fibers of the Retina.—von Michel, J., Berlin, (*Zeitschrift fuer Aug.*, xiii, p. 305), observed opthalmoscopically a dense band of opaque nerve fibers along the course of the superior temporal vessels, starting immediately from the margin of the disc, in a width of 1 disc diameter, about 3 disc diameters long. The eye of the patient (a man, aged 59) was enucleated on account of sarcoma of the ciliary body, and the nerve fibers showed after Weigert's staining the following conditions: The medullated sheaths stop exactly at the posterior border of the lamina cribrosa and are lacking during the transit of the nerve fibers through the lamina cribrosa, excepting a small place at about its center. The surface of the disc shows medullated fibers in its whole extent with sharp borders towards its non-medullated part. The opaque fibers are more or less interwoven, in concordance with the plexus-like arrangement of the nerve fibers of the retina discovered by the author, and lie closely to the ganglion layer of the retina. They extended about 8 mm. and their layer was at the margin of the disc 1 mm., whereas the thickness of the layer of non-medullated nerve fibers, 0.5 mm. distant from the disc, is 0.2 mm. The membrana limitans interna was not thickened, but the retinal strata appeared, near the disc, a little thinner, which, however, is also observed under normal conditions. Essentially the anatomical description corresponds to those of Manz, Usher and Mayweg. Two very well executed lithographs illustrate the affection. C. Z.

ANOMALIES.

Purulent Inflammation During Fetal Life as the Cause of Microphthalmos and Anophthalmos.—Hoppe, Cologne. —Translated by M. L. Foster. (*Archives of Ophthalmology,* May, 1905.) The author states that as a rule in congenital anophthalmos, a conjunctival discharge is to be found at birth or shortly afterwards, and explains the connection between the malformation and discharge as follows: "Whenever the fetal eyeball is so small that the lids and conjunctival sac are depressed backward into the orbit, the palpebral fissure is not tightly closed, the edges of the lids not rarely become turned in, and the amniotic fluid comes into direct contact with the conjunctival sac, where as a foreign body it produces irritation, possibly causing reflex movements of the lids and rubbing of the lashes of the eye. . . . The secretions in the conjunctival sac increase the existing irritation and a mucous or purulent discharge is the consequence."

In conclusion, the author states that while it is conceivable that congenital microphthalmos and anophthalmos may be the result of purulent inflammation of the eye during fetal life, such a case has not been demonstrated clinically and is at any rate very rare.

W. R. M.

Two Cases of Anomalies of the Vascular System of the Optic Papilla.—Kipp, Charles J., Newark N. J. (*Archives of Ophthalmology,* May, 1905.)

Case 1.—*Prepapillary Vascular Loop of Retinal Artery.* On ophthalmoscopic examination the author found a normal fundus, but on the disc the main lower branch of the central retinal artery divided into two branches, the larger one extending forward into the vitreous about 2 mm., whence it turned backwards, forming a coil and entered the retina a short distance from the margin of the disc.

The author points out the fact that similar cases have been reported as persistent hyaloid artery, but that there are no grounds for such a classification and they should be considered as anomalous branches of the arteria centralis retinæ.

Case 2.—*Absence of Arterial Vessels from Central Part of Disc.* This anomaly was present in the left eye of the above patient. Ophthalmoscopic examination showed a normal fundus and an emmetropic eye, but the central retinal artery was absent from the disc, and all the arterial branches made their appearance at the periphery of the disc. The superior retinal veins entered the disc at the upper periphery, while the inferior united in a large and small branch which continued on to the disc to the middle and then entered it.

The right eye of this patient showed an excessive development of the retinal arterial system, and the left eye showed a defective development of the same. W. R. M.

Two Cases of Coloboma of the Optic Nerve.—Ask. Fritz, Lund, (from the eye clinic in the University of Berlin of Prof. v. Michel), gives the ophthalmoscopic description, with illustrations, of two rare cases of a certain type of coloboma of the optic nerve. Literature contains about 50 cases. In both cases the disc appeared kidney-shaped. The concave margin was bordered by a staphylomatous excavation of the sclerotic, of a depth of 5 D. next to the disc. The vessels coming from this part were apparently cilio-retinal vessels. C. Z.

BACTERIOLOGY.

On Ulcers of the Cornea Caused by Diplobacilli, with Investigations on the Resistance of Diplobacilli to Drying in Secretions.—Erdmann, Paul. (From the Eye Clinic in the University of Rostock; *Klin. Mon. f. Aug.,* 1905, 1, p. 561.) Conjunctivitis, due to diplobacilli, is, like in many other places, the most frequent and practically the most important form of conjunctivitis in Rostock (342 cases, i. e., 2.31 per cent., out of 14,783 patients in the last five years). Thirty of these were complicated by corneal affections, mainly marginal infiltrations and ulcers, of which 18 were very severe and were carefully examined bacteriologically. The diplobacilli were found in the deepest layers of the ulcers, while the superficial layers were free of them. They showed in all cases the peculiarities of Morax-Axenfeld's bacilli. Eight cases are reported in detail, which presented ulcers of the character of serpent ulcers and were combined with hypopion and iritis, but differed from them by their slow development and benign course. The predisposing causes were in all probability preceding lesions of the cornea. Only in a portion of the cases the diagnosis could be made clinically, as a rule it must be ascertained microscopically. Treatment with zinc and zincichthyol salve gave the best results. The author emphasizes that he succeeded in producing a typical diplobacilli-conjunctivitis by inoculating a healthy human conjunctive with the seventh generation of a culture on glycerin-agar. E. found also diplobacilli in the nasal mucous membrane. They remained virulent for weeks in dried nasal and conjunctival secretions. The diplobacilli, like other pathogenic germs, occasionally inhabit the conjunctival sac as harmless parasites and cause inflammation only under certain predispositions. C. Z.

Suppuration of Cicatrically Degenerated Corneal Tissue and the Conditions Under Which Micro-organisms Pass Through It Into the Interior of the Eye.—Dolganoff, W. and Sokoloff, M. Translated by M. L. Foster. (*Archives of Ophthal.*, July, 1905.) The authors, from an exhaustive study of the above subject, draw the following conclusions:

1. A purulent infection which begins in a corneal cicatrix quickly spreads to the deeper parts of the eye.

2. The clinical course of this disease is typical, and its characteristic symptoms seem to be a remarkable disproportion between the insignificant injury with which it is started and its rapidity and violence.

3. With very rare exceptions the disease is uninfluenced by treatment and results in the loss of the eye.

4. No explanation of its characteristic course can be obtained clinically. The existing theories fail to explain all symptoms and seem to be disputable.

5. The epithelium of the cicatricial cornea, while intact, serves as a protection against the entrance of infective germs from the conjunctival sac into the deeper tissues.

6. Very virulent cultures of streptococci and staphylococci in the conjunctival sac cause only an acute catarrh of the mucous membrane, which rapidly passes away without producing any injury to the eye.

7. The introduction of a pure bouillon culture of staphylococci into the superficial layers of a leucoma is productive of a typical corneal ulcer, with a precedent abscess.

8. The characteristic points of these ulcers appear to be the fixed course, the ring-like arrangement, and the tendency to hypopyon.

9. The virulence of the culture is an important feature.

10. The introduction of a pure bouillon culture of streptococci is productive of an infiltration, which quickly changes to an abscess and, on the second day, to an ulcer with hypopion. No clinical difference exists between a hypopion caused by streptococci and one due to staphylococci.

11. After the inoculation of a culture of either staphylococci

or streptococci into both the normal and the cicatricial cornea of the same animal, there is a much more rapid development of symptoms in the eye with the cicatricial cornea than in the other.

12. The cicatricial cornea also melts away much more rapidly than the normal under the influence of these cultures.

13. After the introduction of cultures of staphylococci into the normal cornea there is to be observed, in addition to a superficial ulceration at the point of inoculation, a ring-shaped ulcer with a characteristic deposit at the periphery of the cornea. Streptococci do not produce a similar ulcer in the normal cornea.

14. The ulceration produced by the inoculation of staphylococci and streptococci in the superficial layers of the cornea extends in the leukomatous chiefly into the depth of the scar, while in the normal, after an equal lapse of time, it is confined to the superficial layers without involvement of the deeper.

15. The micro-organisms have passed through the corneal cicatrix into the anterior chamber at a time when the ulceration has only just involved the most superficial layers of the leucoma; therefore, the destruction of the cicatrix is not necessary for their passage through it, but only a solution of continuity in its epithelial covering.

16. Colonies of staphylococci of the virulence used in these experiments have passed through the leukoma into the anterior chamber at the end of the second day after inoculation.

17. Two days after inoculation of the normal cornea with staphylococci of the same virulence the colonies have not penetrated deeper than its middle layers, and this proves that their movement is restricted in the normal as compared with the cicatricial cornea.

18. Colonies of streptococci have passed through the cicatricial cornea into the anterior chamber ten hours after their superficial inoculation.

19. In the normal cornea the colonies of streptococci are still limited to the place of inoculation after ten hours.

20. A defect in Descemet's membrane, at a point corresponding to the place of inoculation in the superficial layer of the leukoma, appears to be an indispensable condition for the passage of the micro-organisms through the cicatrix into the deeper parts of the eye.

21. If the inoculation is made at a point not corresponding to the defect is Descemet's membrane, but at some distance away, the microbes can not penetrate into the deeper parts of the eyeball.

even after they have become well developed in the leukomatous tissue, and so a general infection is not brought about.

22. This restraint of the micro-organisms appears to be exercised by the ring of infiltration which is formed between the colonies of microbes and the place in the cicatrix which corresponds to the defect in Descemet's membrane.

23. A passage of the microbes into the anterior chamber could not be demonstrated when, though the leukomata were extensive, Descemet's membrane was uninjured, but the leukomatous tissue ulcerated much more rapidly than the normal.

24. The density of the cicatrix and the absence of a fistula afforded no hindrance to the passage of the micro-organisms.

25. The entanglement of the iris in the cicatrix does not influence the general course of the disease.

26. The iris plays an important part in the formation of the hypopyon. W. R. M.

BRAIN DISEASES AND VISUAL ORGANS.

Trephining in the Treatment of Stasis of the Optic Papilla.—Dubarry, Havre, and Guillot, Surgeon to Hospitals, Havre. (*La Clinique Ophtalmologique,* May 10, 1905.) The treatment of papillary stasis due to intracranial compression has been for many years the subject of discussion in the scientific societies. To-day all appear to be in accord that the condition is caused by a cerebral tumor or a serous meningitis, and that before any surgical treatment is had an antisyphilitic medication is indicated. This accord, however, disappears when the form of surgical interference is under consideration.

Since the epoch in which Quincke proposed the lumbar puncture in serous meningitis, and Horsley proposed simple palliative trephining in operable cerebral tumors, new methods have become the order of the day. The following are the surgical procedures employed:

1. Lumbar puncture.
2. Trephining without opening dura mater. (This may be perhaps bilateral.)
3. Trephining with dura mater opening.
4. Trephining with capillary puncture of the lateral ventricle.
5. Trephining with drainage of lateral ventricle.

It would seem to the authors to be elementary to reserve lumbar puncture for serous meningitis, and trephining should be made for cerebral tumors. Unfortunately, in practice, and in absence of any localizing cerebral symptoms, it is often impossible to make an exact diagnosis. which being so we must seek a method which in our ignorance of the true-cause of the compression, will involve the minimum of risk with the maximum of result. The authors believe lumbar puncture to be often inefficacious and useless. A patient admitted into the Pasteur Hospital in the beginning of 1904, on whom the diagnosis of serous meningitis was made and who was lost sight of for many months, had the lumbar puncture made April 14, 1905; no amelioration occurred, but on the contrary a severe and grave headache followed and lasted many days. If any improvement follows this operation it is not lasting, and repetition of the procedure must follow at short intervals. On the other hand, it sometimes occurs that after trephining grave conditions result, especially in the case of bulbar or cerebellar tumors which arise from bulbar compression, owing to sudden displacement of the neoplastic mass, or from bulbar compression.

It is because in all the cases where intense papillary stasis is found, there is reason to fear the existence of a cerebral tumor that it is not in the interest of cytology to procure rachidian fluid; it is logical to have recourse to trephining. Such is the opinion of Oppenheim, Sanger, Hahn, Herold, and Dupuy-Dutemps. But what should be done in this trephining—should it include an opening of the dura mater? If the dura is opened an intense decompression follows very rapidly, and this is of greater interest at the time when the papillary stasis is beginning and before the period of the nerve atrophy and while there is atrocious cephalalgia which renders the life of the patient unbearable.

From the fact that in cases of this kind the ordinary craniectomy so often results in meningo-cephalocele, which may last weeks and months, surgeons have been induced to adopt a cranio-dural resection; but, unfortunately, even after this latter procedure there may follow a cranial prolapse, and later a meningo-cephalitis. Guldenar and Winkler, von Ziegentweidt, Ali Krogius, Hahn, Frollich, Krancke, Fischer, Keen, Deaver and Mills, Ewald and others, each have had a result of the kind. Sometimes the prolapse is immediate, sometimes tardy. With the first condition when the prolapse immediately occurs, certain surgeons follow the example of Ewald and content themselves with suturing the edges of the cutaneous wound over the hernial mass. Others, imitating Guldenar, immediately resect the prolapse. Adler advises puncture. It is unfortunately certain that this puncture is not free from immediate danger; and it is especially in the cases of intense intracranial hypertension mortal syncope may result. Finally Deaver and Mills have not hesitated to advise drainage of the ventricle when enormous prolapse occurs. When the prolapse is late, we may follow the example of Guldenar and Winckler and resect hernial portions several times, but in order to weigh well the operation, the size of the prolapse, the nature of the prolapsed convolutions, and, in fact, also the general condition of the patient must be considered. In the second case of Dubarry and Guillot, they hesitated before intervening for the triple reason that there was an enormous prolapse, that the patient was very feeble and the prolapse included motor convolutions. Struck with the fact that prolapsus cerebri is sufficiently frequent and often formidable, certain authors, notably Albert, Kammerer, Chipault and Dupuy-Dutemps, have advised to never incise the dura, an impossible precept to follow, as in the second case of the writers in which there existed indications for exploring the cortex—an indication, too, for relieving the intense papillary stasis. But be that as it may, it is certain that in order to derive all benefit possible from a simple craniectomy, that is a craniectomy without opening the dura, it is necessary to make a very large bone removal without having recourse to a bilateral operation, such as Kammerer and Albert extolled and executed. This latter is considered imprudent.

There remains the question of ventricular puncture, in which drainage is systematically made in these palliative interventions. In the actual state of our knowledge one can not reasonably speak of drainage as a happy method destined to obviate an enormous irreducible prolapse by ventricular puncture, which prolapse it is impossible to cover by a cutaneous flap. But it is otherwise with a simple capillary puncture, which is of little risk, and in many threatening cases of hypertension it is possible to give relief. Keen advises that puncture be made in the posterior horn of the ventricle, and to trephine at a point 1¼ inches above and ¼ inch behind the external meatus. Herold prefers 1¾ inches (3.5 cm.).

In summarizing, Dubarry and Guillot believe that craniectomy is the method of election in the treatment of papillary stasis from intracranial compression. This craniectomy to be accompanied by dural incision in all those cases in which the gravity of the symptoms require immediate decompression. In other cases the dura may be left intact, it being understood that the reservation is made of incising it later if the symptoms warrant it.

A last question presents: What are the results of such technic, and in what cases can it be applied successfully? The reply is difficult, the facts being of inextricable complexity. The best known statistics are those of Rohmer and of Dupont. According to them, in those operations directed to the relief of cerebral tumors (not including the condition of papillary stasis) there were 28.5 per cent. cured; ameliorations 42 (8/100 per cent.); no result in 28 (½ per cent.). But this is unsatisfactory, when as is often the case, we know nothing of the actual cause of the intracranial compression.

The authors state that their first case had very evident symptoms of localized compression, facial paralysis, deafness of same side—all being associated with intracranial hypertension, permitting the diagnosis of a tumor at the base—it being known that this tumor had resisted antisyphilitic treatment, and that the affection was progressing, and indicating that the neoplasm was malignant. Now in this patient, contrary to every expectation, the vision has partly returned.

The second case operated by the authors had, on the contrary, no signs of compression, and a diagnostic reservation was made that they were possibly in the presence of a serous meningitis; the prognosis was less grave. Death occurred in two months, an enormous hernia occurring, and at the autopsy a small sarcoma was found in the chorioid plexus. The operation in this case produced no modification of the papillary stasis. The authors state that it is impossible to make a positive diagnosis; that it is impossible to know, *a priori,* what the lesions are that may have produced the choked disc, we having no exact indication for the trephining operation. But as the operation is logically the only one, if there is reason to fear a cranial tumor, it should be done with or without opening the dura in accordance with the degree of hypertension.

The first of the cases reported by the authors was in a woman 21 years old, father and mother healthy; they had had 17 children; 6 of them were dead from unknown causes. Patient never had aural trouble. At the beginning of 1901, patient, especially at night, began to suffer from headaches in the right fronto-orbital region, vomitings in the morning. In January, 1903, vertigo began and audition of right side was lessened, vision of both eyes was lessened. January 20, patient was examined and diagnosis of papillary stasis from compression made. Active treatment with hypodermic injections of cyanid of mercury began, until 23 were employed. No improvement, in fact, symptoms became worse. Patient entered hospital March 14, 1903. Examination revealed unequal pupils and bilateral papillary stasis. Optic discs clearly edematous, with enlargement of veins, more marked on the right side. There was facial paralysis and audition was completely suppressed on the right side; vertigo, titubation, no sign of hysteria save the suppression of pharyngeal reflex, no intellectual trouble, severe headache. Diagnosis: Tumor situated at right cranial base, compressing the seventh and eighth pair of nerves. Operation, March 30, 1903. Trephined right side slightly posterior to Rolandic fissure, two crowns of bone removed and portion of bone between excised, slight cerebral hernia, dura and brain cortex of normal color, no dural sutures. Union per primam. Twenty-four hours after operation partial return of vision. Hearing of right side perfect, facial paralysis abolished and the vertigo and vomiting disappeared. Patient left hospital April 15, 1903, with a right-sided, well-marked encephalocele. April 17, V. O. D., 1/20 O. S., light perception only. Patient was seen again in 1905: Encephalocele stationary and about the size of an orange. Visual field of right eye improved.

In the second case there was nothing to note as to antecedents. There had been no disease of ears. Since 1904, had had headeaches and diminution of vision. Was examined in February, light perception in right eye, left eye vision 2/6, double papillary stasis with considerable edema, vessels tortuous and swollen. Active treatment with cyanid of mercury, under which right papillary stasis improved, but vision did not; in the left eye, on the contrary, vision became 2/3. In two months the disease progressed rapidly, headache became intense, there were vomitings and vertigo, and vision lessened rapidly. Cyanid was again administered without benefit; complete double amaurosis and lessened audition, diminution of muscular power, especially of right side. Diagnosis: Papillary stasis from compression due probably to intracranial tumor. Operation, December 5, 1903. Trephined right side over Rolandic region, two crowns and intermediate bone removed, dura incised, followed at once by a hernia of cerebral substance; no suture of dura. Immediately after operation cephalalgia was suppressed and hearing returned on both sides, sensation not modified, but muscular power of left side became nearly normal, vomiting and vertigo disappeared, no visual improvement. Encephalocele became marked after eight days. Patient died January 31, 1905. Autopsy revealed tumor with pedicle attached to chorioid plexus.

B. E. F.

CATARACT.

New Attempts to Cure Cataract Without Operation.—de Wecker, Paris. (*Annales d'Oculistique,* March, 1905.) Nature, de Wecker says, has shown us how she may proceed by two distinct methods to restore vision lost by cataract: In one there is such a liquefaction of the cortical masses that it is possible for them to undergo complete absorption and the small nucleus falls to the bottom of the capsule, leaving the pupil occupied only by the two agglutinated layers of the capsule. The second method depends upon the shrinking of the subcapsular cellular elements and the sclerosis of the crystalline fibers, which, by reducing the size of the capsular sac and the volume of the lens, exercise a traction on the zonula and detach it. The author has observed spontaneous cures by both of these methods, but does not purpose in this communication to speak of the attempts to imitate them. He limits himself to the discussion of attempts made: First, to prevent the evolution of cataract; second, to arrest the progress of the affection when it has commenced; and, third, to cause commencing opacities to retrograde, or even to disappear.

He remarks that no doubt the majority of cases of cataract occur in subjects of arthritic and arteriosclerotic changes. Admitting the progress made in the treatment of these conditions, he doubts that, in the countries that are best provided with competent physicians and ophthalmologists, a diminution in the number of cataracts has been noted. Nevertheless, he says, it is well to call attention in the case of persons threatened with cataract to the importance of examining the urine for urea, the chlorides, and particularly, for sugar. Arteriosclerotic and arthritic subjects, he believes, may have intermittent attacks of diabetes, and thus present visual disturbances which are due to changes in refraction and slight defects in transparency of the ocular media, which can be modified by appropriate treatment. Not much faith, he asserts, can be accorded to observations of improvement in vision coincident with diminution of glycosuria, which have been made at Carlsbad, as an ophthalmoscopic examination and an accurate determination of the visual acuity in the cases are wanting; a case, however, is recorded by König in which a patient who was cured by Vichy, recovered vision with absolute integrity of his lenses.

The question whether the progress of a commencing cataract can be arrested by appropriate treatment presents great difficulty in the fact that cataract does not follow any regular progress, but may remain stationary for months or years. The author has met with cases in which there was no change in twenty years. It is undeniable, he says, that opacification of the crystalline lens in all its degrees may be arrested, and if treatment has been instituted, it is certain that therapy will be claimed as the causative agent.

The treatment in this direction that has attracted most attention is that which has been recommended by Badal, and which consists in bathing the eyes twice a day with a 1 to 40 strength solution of iodid of potassium; but the author does not think that the cases reported by Badal are conclusive. He believes that subconjunctival injections would be more likely to prove efficacious, but he has little faith in this form of treatment.

In the effort to cause the opacities of commencing cataract to disappear, the author has experimented with organotherapy, using an extract prepared from the media and internal membranes of the eye; he says, however, that the number of his cases has been too small, and the time of treatment too brief to draw any conclusions. Evidently, the results, so far as he has gone, have not been brilliant. The author thinks that the method of treatment by intracapsular injection of solutions of 5 per cent. of iodid of potassium and 1 per cent. of cocain are worth trying. G. C. H.

ON UNILATERAL PERINUCLEAR CATARACT.—STEIN, H. W. (From the University Eye Clinic of Prof. E. Fuchs, *Wien. Beitraege zur Aug.*, Heft. 63, p. 158.) Unilateral perinuclear cataract is of rare occurrence, especially if of traumatic origin. Stein reports five cases. In the first case it developed after a perforating injury by a piece of copper, and is explained according to von Arlt's theory, by displacement of the central along the peripheral portions of the lens. The fifth case was probably due to rachitis, and in the remaining three the perinuclear cataract apparently was secondary, produced by apposition of normal lens fibers over the opaque lens during its further growth. C. Z.

OPERATION OF SYMPATHETIC SOFT CATARACT, WITH REMARKS ON SYMPATHETIC OPHTHALMIA.—HIRSCHBERG, J. (*Centralbl. fuer Aug.*, 1905, p. 97.) A girl, aged 26, had detachment of the retina of left eye seven years ago. Three years ago iridectomy was performed on the eye for acute glaucoma. A month later iritis of the right eye destroyed sight in a few days. The left eye was at once enucleated and after five months' treatment with mercury and iodin vision of right eye rose to 5/10. Then it steadily decreased and the eye was blind for two years, when she came to Hirschberg, who found cornea clear, anterior chamber shallow, eyeball soft, iris completely degenerated and adherent to the lens, anterior capsule covered by a thick, hard vascularized membrane. The operation consisted in section of lower limbus, and, carefully avoiding the iris, in removing the capsule with the four toothed forceps. The pupil at once enlarged and lens matter oozed which was removed partly by irrigation, partly by outward pressure. Uneventful recovery. Ophthalmic red reflex, no details. Vision with + 8, fingers at 1.5 m.

In another case Hirschberg cut the capsule with Knapp's knife, which had to be repeated, as the lens matter was not sufficiently removed by the first operation. If in such cases the pupil should close again, Hirschberg advocates opening with Knapp's knife through the iris. He considers this preferable to the method of Wenzel, in which the cataract knife penetrates cornea, iris and lens.

Two other cases are reported with sympathetic changes of the fundus, viz., numerous, small, roundish light foci of the periphery which faintly resemble specific lesions; with illustrations. C. Z.

ON THE OPERATIVE TREATMENT OF ZONULAR CATARACT.—ASK, FRITZ, Lund. (From the Eye Clinic of Prof. Schoeler, Berlin; *Klin. Mon. fuer Aug.*, 1905, 1, p. 480.) In zonular cataract vision can be improved either by iridectomy, in exceptional cases iridotomy, or by discission or extraction of the lens. Each of these operations has its special indication, with regard to which, however, authors differ. Professor Schoeler performs iridectomy, if in mydriasis after correction of refractive errors far and near vision, through the stenopæic slit, are sufficient. The visual results in 46 cases operated on, since 1897, are given. Seven cases are reported in detail, in which discission was performed on one eye, iridectomy on the others, all with improvement of vision. Removal of the lens gives undoubtedly the best possible vision. In four of the cases the obtained vision was the same in both eyes, in one the eye on which iridectomy was performed, was worse than the other, but in all the non-aphakic eye was used for work, viz., the one in which accomodation was preserved. Ask discusses the following points in favor of iridectomy: The most frequent anomaly of refraction in zonular cataract is myopia, but generally below 5 D. Increased refraction has been observed, not only after iridectomy in one eye, but also after removal of the lens in the other, and can not be attributed to iridectomy. The opacities of zonular cataract generally become denser, but remain stationary in most cases, as observed by Crichett, who examined cases 30 to 35 years after the iridectomy. Unusually weak or no correcting glasses are required. To an aphakic eye glasses for far and near are indispensable. These and the constant changing of far and near glasses are very disagreeable and exclude the aphakic patients from many occupations, e. g., servant, waiter, salesman, or work which exposes them to strong light, frequent changes of temperature or steam. Then the operations on the lens are more dangerous, being often followed by complications, than iridectomy. Removal of the lens is preferable if the zonular cataract shows signs of progressive, or in myopia $<$ 14 D. In myopia $<$ 8 to 10 D. Ask considers it expedient to remove the lens of one eye even under conditions favorable for iridectomy, in order to obtain an emmetropic eye without iris coloboma. This is illustrated in one of the cases.

C. Z.

REPORT ON 500 CATARACT EXTRACTIONS.—BLASCHEK, ALBERT. (From the Eye Clinic of Professor Dimmer in the University of Graz; *Zietschrift f. Aug.*, 1905, xiii, p. 780.) The lids were never opened with the fingers, but with Desmarres' retractors, which were also used instead of stop specula. Iridectomy was performed only in complications, as cough, restlessness, obesity, in immature cataracts and after loss of the other eye. The capsule was opened with the capsular forceps. If vitreous presented in the wound, the lens was extracted with Reisinger's double hook, which may succeed without any loss of vitreous. Discission of secondary cataract was done with Knapp's knife needle, as early as possible, from the fourteenth to twentieth day. Four hundred and seventy cataracts were uncomplicated, 30 complicated, 20 failures, i. e., 4 per cent.; from wound infection 2, iridocyclitis 7, remnants of lens matter and hyphema 4, chorioidal hemorrhage 1, glaucoma 1, opacities of vitreous 4. In the case of chorioidal hemorrhage, the other eye, in order to avoid this complication, was operated on according to Peschel, viz., after discission puncture and removal of the nucleus with good result. In another case a commencing wound infection was successfully arrested. C. Z.

CASUISTICS.

THE DURATION OF LIFE AFTER THE APPEARANCE OF ALBUMINURIC RETINITIS.—SNELL, SIMEON, Sheffield (*Lancet*, July 15, 1905), say that retinitis occurs in about 30 per cent. of all cases of Bright's disease. A good deal of information has been collected during the past few years showing that when retinal changes are present an indication is given of the serious condition of the kidney disease and that life will only be, in the majority of cases, a question of months. There is a considerable difference in mortality statistics compiled from hospital as opposed to private patients, and especially private ophthalmic patients. Those in better social position have the means of taking the hygienic care requisite in Bright's disease and possibly alcoholism plays a more important part in the class met with in hospitals. It will be found that the period of life after the detection of retinitis is longer in private patients, short as it is, than in those cases observed by Miley in the London Hospital. Snell has collected all the instances in his private case-books subsequently to the publication of his first paper. He finds records of 35 cases. Three of these must be at once excluded as the retinal affection was not typical. One of these died, however, about a couple of years later, one is living after three years, and the other can not be traced. Of the remaining 32 he was unable to trace 9, thus leaving 23. Three are known to be living. Of these one, a man, aged 36 years, was first seen in July, 1904; the kidney affection had been previously recognized. Two were women, and both had suffered during pregnancy. One, aged 35 years, seen in March, 1891, recovered vision partially, but became affected again in the next pregnancy, two years later, with resulting blindness. The other woman, aged 45 years, seen after the birth of the first child, in January, 1897, made a good recovery. These, together with other instances of the albuminuria of pregnancy, will be considered again later. The remaining 20 were ascertained to have died as follows: Two at the end of one month, 2 at two months, 1 after three months, 2 after four months, 1 after five months, 1 after six months, 2 after nine months, 1 after twelve months, 1 after fifteen months, 1 after twenty-two months, 2 after twenty-four months, 1 after twenty-eight months, 2 after thirty-two months, and 1 after four and a half years. The average duration of life in these cases is fourteen and a half months, but added to the eight previously recorded, making a total of twenty-eight, the average is barely one year. The renal disease associated with pregnancy is rightly excluded from consideration in this connection. For, fortunately, it not infrequently happens that with the termination of gestation the albumin disappears and the retinal disease clears up, though often vision may remain seriously affected, and it is recognized that the condition is not fatal to life in the same way as Bright's disease. P. H. F.

A PRACTICAL METHOD FOR THE DETERMINATION OF THE DEFECTS OF THE SPECIAL SENSES IN SCHOOL CHILDREN, WITH A REPORT OF 3,780 EXAMINATIONS.—DEANE. LOUIS C. (*California*

State Journal of Medicine, July, 1905.) This excellent article is one of the many indications that the idea of having school children's eyes, ears, noses and throats annually and systematically examined by school authorities, has taken firm hold of the medical, educational and hygienic worlds, and that the coming generation will be much better equipped for the battle of life than that of any past generation. A healthy mind as a rule indicates a healthy body, and the sooner this idea is recognized and acted upon the better for all parties concerned. Dr. Deane's article shows that this work is going on in California, but we fail to find in his writings much, if any, matter that is original. Indeed, the majority of the article is apparently taken quite boldly from the writings of Dr. Frank Allport of Chicago, and it would have been much better, in our opinion, if credit had been given where credit is due. The only reward that a medical author receives for the labor of writing is perhaps some professional credit from his colleagues. If another author does not see fit to give a professional brother credit for work which he has accomplished along given lines, that is, of course, for him to determine according to his ideas of justice and equity, but when he apparently not only takes another man's ideas, but also uses his very words, we believe that the time has come when the first author's name should at least be mentioned. We find no mention of Dr. Allport's name in Dr. Deane's article.

Deane says quite correctly that the plan for making these examinations varies in different cities, etc. This is quite true, and in the opinion of the reviewer is a fact to be regretted. Practically all the various plans are patterned after the original one of Allport, and if the plan is one which almost universally prevails, then why should not his plan be everywhere adopted, and made uniform and standard, instead of deviating from it, a little this way or that way, for the evident purpose of infusing some slight personal or local coloring into the methods pursued in different localities.

Deane says that the examination of pupils can hardly be placed in the hands of the teacher, who has neither the time nor knowledge for the work. The reviewer begs to differ with Deane in this opinion, as he believes that the teacher is competent to make the examination, and that such work will be a great saving of his or her time in the future. It must, of course, be understood that the teacher is not supposed to make a thorough scientific eye, ear, nose or throat examination of a pupil; she (supposing the teacher to be a woman) has merely to ascertain the smallest line of Snellen's test types the pupil can read at 20 feet, whether the pupil has habitually red or inflamed eyes, whether cross-eyes or headaches exist, whether the ears discharge or smell badly, whether the pupil is a mouth breather, etc., etc. Questions of this simple, yet pregnant nature can be easily answered by a woman sufficiently intelligent to be a teacher, and the nine questions formulated by Allport will disclose the existence of perhaps 90 per cent. of serious eye, ear, nose and throat diseases. The teacher, of course, does not know what is the matter; she is not and could not be expected to make a diagnosis; she simply knows that something is wrong, and leaves the professional work in the hands of the medical man, where, of course, it properly belongs. Allport's idea in having these preliminary examinations made by the teachers was based upon the fact that it would produce too much professional friction and jealousy to have eye and ear surgeons appointed to do this work among the pupils, and of a truth, it would place too much power and prestige in the hands of those who might or might not use such positions properly and fairly. Besides this the employment of eye and ear surgeons to do this work would necessitate the involvement of more expense than any ordinary Board of Health or Education would assume, and the plan would almost invariably be defeated for this reason alone. The best and most practical plan is undoubtedly to have the examinations made by the room teachers, who will furnish defective pupils with "cards of warning" to parents, notifying them that some eye, ear, nose or throat defect is believed to exist, which will interfere with the acquirement of an education, and advising them to consult either their family physician or some competent eye or ear surgeon, either at his office or free dispensary.

As regards the teachers' lack of time, the reviewer believes that a little time given to this matter at the beginning of each school year, say in September, will result in a great saving of time before the year is out, by increasing the learning capacity of defective pupils, who will thereby be much less of a tax upon the time, patience and endurance of all room teachers. Dr. Allport has suggested, and the idea appears to be a good one, that a definite day be selected, as, for instance, the third Monday in September, which shall be devoted each year to these examinations, a day being amply sufficient for each room teacher to examine all the pupils in her room. In this way all the school children in a city can be examined in a day, and the succeeding months will afford time and opportunity to tactfully "stir up" negligent parents, and to watch the effects of intelligent care and treatment.

The reviewer desires to compliment Dr. Deane upon the excellent work accomplished by him and his colleagues in San Francisco, and to urge upon others the advisability of similar labor in every town and city in this country. But he likewise desires to discourage the introduction of multiple plans, believing that the best results can be obtained by the universal adoption of some such one simple, efficient and economical plan as proposed by Dr Allport.

We are informed that the idea has now been adopted by the following State Medical Societies: South Dakota, Michigan, Montana, Southwestern Missouri, Delaware, Minnesota, Colorado, New York, California, Alabama, Utah, Illinois, Massachusetts, North Dakota, Arizona, West Virginia, Kentucky, Indiana, Louisiana, Rhode Island, Nebraska and the Mississippi Valley Medical Association. The following State Boards of Health have adopted the idea: Illinois, Montana, New York, Indiana, Connecticut, Minnesota, Kansas, Colorado, Ohio, Wisconsin, Maine, New Hampshire, North Carolina, Michigan, Vermont, Utah, North Dakota, Rhode Island, Alabama, the State and Provincial Boards of Health of North America, and the American Public Health Association. The following State Boards of Education have adopted the idea: Texas, Kansas, Minnesota, Colorado, Wisconsin, North Carolina and Vermont. The idea has also been passed as a law in several states, and should be by all states. Let the good work go on. T. A. W.

CIRCULATION.

Embolism of the Central Artery of the Retina. Retention of Normal Vision.—Hay, Percival J., Edin. Birmingham, Eng. (*The Ophthalmoscope,* June, 1905.) Illustrated. This case presented the typical picture of embolism of the central artery with edema of the retina and hemorrhages, with the exception of the papillo-macular region. This was explained by the fact that the whole of the macular region received its blood supply from branches of a cilio-retinal artery. M. B.

Re-establishment of the Retinal Circulation by Anastomosis After Obstruction of the Central Retinal Artery.—Gonin, Lausanne. (*Annales d'Oculistique,* March, 1905.) It is a well known fact, Gonin says, that in the accident commonly designated as embolus of the central retinal artery, the circulation is not entirely interrupted, or at best, that it is re-established after a little time in the arterial branches of the retina. The explanations of this fact are of two kinds. One supposes that the obstructed artery becomes permeable, and the other suggests a lateral

path destined to pass around the obstacle. Gonin reports an observation which shows that in certain cases the return of circulation must be attributed to a collateral current. A woman 54 years of age became suddenly blind in the left eye, with all the symptoms of obstruction of the central artery. Three months later there was no return of light perception. The optic disc was completely atrophied. The retinal veins were reduced to about one-half of their normal caliber, and the arteries on the disc, which were almost invisible, appeared to arise from the retina at a little distance from the disc margin. Careful examination by the direct image showed that these arteries originated in the disc, but that they presented anomalous conditions. They arose from the margins of the disc as very fine threads, and after a short passage on the retina, suddenly enlarged, so as to acquire almost their normal caliber. In one case the artery was formed by the union of three such branches. The author thinks it most likely that the anastomosis revealed by the ophthalmoscope resulted from the development of fine communications that existed before the obstruction of the central artery, but that they never would have acquired any degree of importance if the regular circulation had not been interrupted—that they are communications between the central system and the arterial circle of Zinn which surrounds the optic nerve at its entrance into the eyeball.
G. C. H.

CONJUNCTIVA.

Conjunctival Irritation Excited by Proximity to a Horse.—Posey, William Campbell (*Jour. A. M. A.*, June 3, 1905), reports three cases and refers to others described by rhinologists. It is similar to hay fever, but not identical. He concludes that the irritation of the conjunctiva in the classes of cases under discussion is occasioned by a peculiar individual susceptibility to certain substances, chemical, bacteriologic or otherwise, which emanate from the horse.
M. D. S.

On the Etiology of Croupous Conjunctivitis.—Christ, W., Carlsruhe. (From the Eye Clinic of Dr. Gelpke; *Beiträge zur Aug.*, Heft 63, p. 127.) A long series of cocci and bacilli, almost the whole flora of the pathogenic germs of inflammations of the conjunctiva, have been described as the producers of croupous conjunctivitis, so that a large number of authors (in opposition to Saemisch, in the second edition of the hand-book of Graefe-Saemisch, reviewed in the last issue of Ophthalmology) have divested it of its character as an independent disease. The observation of a number of cases, of which 5 are reported in detail, confirmed the author's view that croupous and diphtheritic conjunctivitis are clinically well distinguished, characteristic affections, although a bacteriologic classification is so far not possible. C.'s cases occurred exclusively in children, whose general conditions were also impaired. The disease was associated with fever, angina, eczema of the face and swelling of the preauricular glands. The bacteriologic examinations showed pseudo-diphtheria bacilli, only in one case Loeffler's virulent diphtheria bacilli, staphylococci, pneumococci and round diplococci. The treatment was antiphlogistic and antiseptic, combined with instillations of protargol 2 per cent. In the subsequent corneal affections, which occurred in 43 of the cases, heat and instillations of pilocarpin were beneficial. No marked result was obtained from antidiphtheritic serum. C. advocates careful bacteriologic investigations, which will be of great importance for prophylaxis, prognosis and treatment. C. Z.

GONORRHEAL OPHTHALMIA, WITH INVOLVEMENT OF THE ANTERIOR ETHMOIDAL CELLS; REPORT OF A CASE.—SUKER, GEORGE F., Akron, Ohio. (*Annals of Ophthalmology,* April, 1905.) The author makes a strong plea for the microscopic differentiation between the diplo-pneumococcus infection and gonococcus infection. While it does not make much difference insofar as treatment is concerned, scientifically and to the patient it does make a difference. It is only possible to make this differentiation by using Gram's method. The severity of the inflammation of these two infections may not materially differ, except that the diplo-pneumococcus infection gets well sooner, and does not leave behind it a conjunctival gleet. He comments upon the immunity of the nose to gonorrheal inflammations, even in the presence of large quantities of gonorrheal pus from the eyes.

The case of Mr. D., aged 24 years, is reported, who apparently had a simultaneous gonorrheal infection of the conjunctiva of one eye and the anterior ethmoidal cells on the same side. Evidences of orbital cellulitis were present. The gonococcus was found in the discharge from the eye and nose. Repeated urethral examinations proved negative. The ethmoidal cells were opened and flushed and treated by applications of silver nitrate. The eye was treatel by silver nitrate, iced applications and cleansing. Temperature ranged from 100 to 102 until the ninth day, when it began to fall. The discharge from the nose had also practically ceased. The cornea perforated above on the eleventh day, with prolapse of the iris. The incarcerated iris prevented the entrance of germs into the globe, and the eye went on to recovery. After recovery was complete the eye was operated upon for the correction of the iris hernia and a double pedunculated Kuhnt's conjunctival flap used to close the wound. Ten days later an optical iridectomy was performed in the temporal quadrant, which gave him fair vision. M. B.

VERNAL CONJUNCTIVITIS.—CHACON, A., Mexico. (*Archivos de Oftalmologia,* March, 1903.) The author claims that, owing to the climate of Mexico, this affection shows some characteristics peculiar of the country. There are two forms, the bulbar and tarsal, the first affecting the conjunctiva adjacent to the cornea, the second that of the upper lid. The bulbar is the more common, though each variety may appear in the same eye. It is insidious in onset, resembling at first a common conjunctivitis, dry or catarrhal, and presents similar initiative symptoms. In the bulbar form vegetations, more or less elevated and dirty yellow or even red in color (according to the vascularization) appear in the conjunctiva adjacent to the cornea. These vegetations extend slightly over the cornea. The conjunctival injection is very marked. In the cornea itself there generally appears a crescent-shaped, whitish line resembling the arcus senilis and separated from the conjunctiva by a margin of clear cornea. Occasionally, in place of the vegetations, one sees in the conjunctiva a small spot not elevated, but with the characteristic color of the usual vegetations. Sometimes the conjunctiva overlaps the cornea in its entire circumference. The tarsal form has the appearance as described by Fuchs, and has been mistaken both in Europe and Mexico for trachoma. The affection appears in young people, it is chronic, irresponsive to treatment and of years' duration, disappearing itself when the patient attains adult life. H. M. F.

AN INSTANCE OF PERINAUD'S CONJUNCTIVITIS.—GRIFFIN, O. A., Ann Arbor. (*Ophthalmic Record,* May, 1905.) Girl, aged 14, left eye alone suddenly became inflamed, attended with pain, photophobia, marked swelling of lids and a profuse watery discharge, which became purulent in two days' time. These symptoms rapidly diminished under simple home remedies. When seen, about a week later, by the author, the lower lid was found slightly swollen and the lower retrotarsal fold was occupied by a mass of polypoid granulations (illustrated by pen drawing). Superficial ulcerations were observed between some of the granulations, and an erosion was present upon one of the larger granulations. Small amount of thick, glary secretion present, with slight injection of the adjacent ocular portion of the conjunctiva. Treatment consisted in excising the granulations and making application of silver nitrate. In the course of a week, while the granulations were rapidly disappearing, the preauricular glands on same side became swollen and painful, and the patient developed some fever. After the swelling reached alarming proportions, resolution set in and terminated in rapid recovery, with complete absorption of the conjunctival granulations. M. B

ESSENTIAL SHRINKING OF THE CONJUNCTIVA.—BEAUMONT, W. M. (*Brit. Med. Jour.*, July 8, 1905.) Laborer, well developed physically, but not mentally, has an xerotic condition of his conjunctivæ which has existed for many years. In the left eye the conjunctiva is dry and wrinkled, resembling the neck of a tortoise. The culs-de-sac are non-existent, and the edges of the lower lids are continuous with the bulbar conjunctiva. The eye is quite insensitive and there is no lid reflex on touching any part of it. The cornea, as well as being anesthetic, is dry, resembling ground glass. Nevertheless, he can count fingers at 30 cm. The cornea stains with fluorescine. The upper lids are in-curved, and the lashes rub against the cornea and conjunctiva without producing any discomfort.

The right eye shows an early stage of the same condition. There is no history of pemphigus. Neither family nor personal history throw any light on the causation of the condition. There is no night blindness, and no frothy discharge from the eyes. Slide preparations were made, and though several varieties of bacilli were found, none of them had the characteristics of the bacillus xerosis. P. H. F.

CONJUNCTIVITIS PETRIFICANS.—POSEY, WILLIAM CAMPBELL, Philadelphia. (*Annals of Ophthalmology,* April, 1905.) L. G., a colored female, aged 30 years. Seen two years ago on account of an inflammation of both eyes of long standing. History of recurring attacks of conjunctival inflammation since 12 years of age. Present attack of several weeks' standing, with symptoms of a foreign body, itching and burning, slight lachrymation, but no discharge. Health good, and examination failed to discover any dyscrasia. Lids of both eyes, especially the right, were thickened. Palpebral conjunctival studded with numerous yellowish-white areas slightly raised above the conjunctiva, though under the epithelium. Bulbar conjunctiva injected, but free from these spots. The conjunctiva between the spots was reddened and swollen. The lower quadrant of each cornea was superficially infiltrated and vascular. Ophthalmoscopic examination negative.

A careful review of Leber's original paper on conjunctivitis petrificans, and the reported cases of von Hippel, Vossius, Reif and Brücker lead the author to believe that his case was one of conjunctivitis petrificans.

Leber describes the disease as characterized by the appearance of a number of irregular, white, opaque spots, which are but slightly elevated above the surface and are covered by epithelium. The white spots form a marked contrast with the red of the surrounding tissue; they occur in any part of the plained of. After a few weeks of inflammation the eyes become conjunctiva and show a tendency in advanced cases to spread to the bulbar conjunctiva and the tissue of the lids. Unless the cornea is involved, subjective symptoms are but little complained of. After a few weeks of inflammation the eyes become quiescent and inspection may reveal a normal conjunctiva. After several recurrences a number of these spots are seen to coalesce, the deeper tissues of the conjunctiva become involved and large chalk-like areas appear in the lid, which give rise to corneal ulceration. These whitish masses become as hard as stone, with an irregular surface, from which little fragments break off. The disease is essentially chronic, lasting for months or even years. It may end in complete recovery or, if the ulceration has been extensive, permanent damage remain. At times there is a pericorneal zone of infiltration, but generally the cornea is unaffected. A bacillus could not be isolated. Chemically, Leber found the spots to be deposits of lime in the tissue of the conjunctiva, either in the form of carbonates, phosphates or crystals. Under the microscope an excised portion of the affected conjunctiva could be divided into three layers, a superficial, which resisted all stains and was completely necrotic; second, in which the process of calcification appeared to be active; and third, the deepest of all, showed simple subconjunctival, round-cell infiltration and engorged blood vessels.

Treatment consists in the repeated and thorough removal of the masses from the conjunctiva by mechanical measures and the employment of mild antiseptic lotions and warm compresses. Internal medication is useless. M. B.

CORNEA.

The Importance of the Corneal Temperature and Nictitation in Corneal Therapeutics.—McGilivray, Angus, C.M., M.D., F.R.S.E., Dundee. (*The Ophthalmoscope*, July, 1905.)

Reference is made to the work of Michel and Silex in the determination of ocular temperatures. "Silex summarizes as follows: 'Taking all circumstances into consideration, we are justified in saying that the conjunctival sac has a temperature of 2 degrees C., corneal lamellæ, 10 degrees C.; anterior chamber, 6 degrees C.; lens, 3 degrees C.; iris substance, 0.36 degrees C., and center of the vitreous 4 degrees C. less than the rectal or body temperature.' These figures agree approximately with those given by Michel. In all inflammatory affections, Silex found that the temperature was elevated as compared with the healthy eye; in hypopion keratitis as high as 1.45 degrees C., and in acute iritis 1.56 degrees C." The author takes the position that, since pyogenic microorganisms grow best at about the normal body temperature, their growth is inhibited in the anterior segment of the eye until the temperature of this portion is raised by closure of the eyelids. He also contends that nictitation causes such constant movement of the bacteria and so cleans the surface of the cornea that they find it difficult to grow. Prolonged closure of the eyelids, as in photophobia and blepharospasm from exposure of the epithelial plexus of nerves, such as is found in superficial ulcerations and abrasions, raises the corneal temperature practically to body temperature, and thus the natural inhibiting action enjoyed by the cornea during health becomes impaired. The author's treatment of corneal ulcerations and abrasions consists mainly of allaying the pain and photophobia, so as to enable the patient to open the eyelids freely, and thus restore normal temperature and nictitation. For this purpose cocaine is advisable, but not in watery solution, because of its desiccating action upon the corneal epithelium. He dissolves the cocaine in oil, and claims that thus used it has no deleterious action, and that the eye is made comfortable for several hours, when it is used again. The patient is able to keep the eye open and normal corneal temperature and nictitation is restored. The following ointment is recommended.

℞.	Hydrargyri oxid flav	gr. ii
	Atropin	gr. ii
	Cocain	gr. iii
	Lanolin	ʒii

M. Sig.: Apply in eye three times daily.

M. B.

Upon Five Cases of Family Degeneration of the Cornea.—Doyne, Robert W., M.A., F.R.C.S., and Stephenson, Sidney, M.B., F.R.C.S.E., London, England. (*The Ophthalmoscope*, May, 1905.) Four out of eight children born from the same parents all developed some inflammatory disease of the eyes between the ages of 7 and 16 years that lead to corneal changes of great similarity in them all. The father of these children was examined, and his corneæ were found in the same condition. The mother of this man was said to have had the same kind of eyes from childhood. The five cases examined presented corneæ partially or completely covered with nebulous and dense opacities, with portions of roughened epithelium. There appeared in the opaque areas what appeared to be pigment deposits, but by ophthalmoscopic examination these supposed deposits were seen to be minute clear spots that looked black because of the dark background. M. B.

A Report of Ten Cases of Interstitial Keratitis.—Hildrup, Josephine W., Philadelphia. (*Ophthalmic Record,* May, 1905.) "In summing up these cases, the first point noted is the age, which ranges from 6 to 23 years, with one exception; it is of interest also that 6 of the 10 cases are boys, 3 being negroes. As to the cause: In several of this series (the majority, it may be said) the Hutchinson teeth and the peculiar formation of the face have been observed and noted, while in the 17-year-old colored patient quinine was the curative agent. In the case of the 58-year-old patient she was carefully studied for rheumatism, gout, influenza, impalidism and uterine affections, with negative results, but, having received alterative treatment, she is almost well. The statement that in the acquired forms of the disease the duration of the disorder is of a shorter period of time than those which are hereditary seems to be borne out by this study." M. B.

Long Interval Between Parenchymatous Keratitis of Right and Left Eyes.—Consiglio, A. (From the Eye Clinic of Professor Fuchs, Wien; *Beitr. zur Aug.,* Heft 63, p. 125.) The right eye of the patient was affected at the age of 18, the left eye 26 years later. The etiology could not be ascertained. Since both eyes were diseased, a constitutional trouble must be surmised, probably hereditary syphilis, as in the majority of cases, since the val of one or several years. An intermission of 26 years seems to keratitis showed the usual type and there were no signs of acquired syphilis, tuberculosis, scrofula, etc. Keratitis e lue hereditaria affects both eyes, frequently not simultaneously but after an inter-be unique. C. Z.

Changes of the Cornea in Ulcers.—Sachsalber, A. (From the Eye Clinic of Professor Dimmer, Graz: *Zeitschrift f. Aug.* 1905, xiii, p. 640), reports experimental investigations on rabbits, subjected to inanition, to which he was prompted by the observation of an intense accumulation of corneal corpuscles in place of regular formation of a scar in corneal ulcers of an atrophic blenorrhoic child. S. found that the physical conditions of pressure acting on the cornea exert a very important influence on the form of the cicatricial elements. The corneal corpuscles participate most in scar-formation, much more than hitherto supposed. They very likely form the whole scar of the corneal parenchyma in cases devoid of blood vessels. S.'s experiments defeated the old doctrine that keratomalacia was simply caused by disturbances of nutrition of the whole organism. Inanition is only a factor which influences the course of an ulcer most unfavorably, without frustrating the normal regenerative tendencies of the organism. C. Z.

GENERAL DISEASES AND VISUAL ORGANS.

Traumatism as a Cause of Constitutional Eye Diseases.—Guillery, H., Oberstabsarzt, Coeln (*Klin. Mon. f. Aug.*, 1905, 1, p. 630), discusses the question, ventilated at the meeting of the Verein rheinisch-westfaelischer Augenaerzte, Feb. 5, 1905, whether parenchymatous keratitis can be elicited by traumatism in an individual of hereditary tuberculous or syphilitic predisposition, and answers it in the affirmative. He shows that the predisposition in tuberculosis and syphilis consists in a circulating metabolic poison, like in other infectious diseases, as influenza or malaria, etc. The poison in hereditary lues shows in itself a predilection for establishing its action in the cornea, the more so if the resistance of the latter is weakened by traumatism. The development of parenchymatous keratitis on the other eye in the case under consideration is also explained by a toxic action on the cornea of the second eye, prepared for it by the sympathetic (not in the usual sense) influence of the traumatism affecting the first eye. We know that after injury of one cornea, the pericorneal and other blood vessels of the anterior segment of the second eye are frequently injected, which can not be without influence on the consistency of the aqueous and the nutrition of the tissues, even if they do not lead to marked inflammations. In hereditary lues it is not the sympathetic irritation as such which produces the keratitis in the second eye, but its combination with the enzymatous poison of hereditary lues.

G. adds: If we knew a poison, which had the same bio-chemical relations to the uveal tract as the poison of syphilis must have to the cornea, and were we allowed to suppose that in typical sympathetic ophthalmia it circulated in the body, the understanding of the former would meet with no obstacles, and we would not need to search any longer for bacteria. C. Z.

A Contribution to the Study of Metastatic Panophthalmitis.—Viciana. (*Archivos de Oftalmologia,* October, 1904.) "So-called metastatic chorioiditis, or, more properly speaking, chorioiditis of endogenous origin, is not very frequently seen in practice, and a favorable termination of a case is even rarer. For these reasons we deem it opportune to report three cases which presented themselves in our clinic, two of which, fortunately, terminated favorably. Two of these cases were children who had suffered from slight gastric troubles; in regard to the infection it may be said that the suppurative chorioiditis appeared after the termination of the gastric symptoms resembling those cases of meningitis in children and adults following slight attacks of gastric fever. To this is due, without doubt, the opportunity to treat these two cases of panophthalmitis from the very commencement.

Case 1.—Little girl, 4 years old, according to the mother's statement, suffered with a corneal abscess six months previously. Present state: Left eye normal; right eye filled with pus from no known cause save an attack of indigestion two days before; lids slightly inflamed and distended, partially covering the ocular globe; marked conjunctival chemosis; cornea clear; anterior chamber filled with creamy pus; vision completely lost. There were no ciliary pains. On account of a general prostration, rest was ordered. Diagnosis, panophthalmitis of endogenous origin following gastritis. Therapy, 4 per cent. silver nitrate with abundant irrigations of sterile water, atropin, compresses of an effusion of warm tea. Immediately following the treatment there was gradual reabsorption of the hypopyon, progressive diminution of the chemosis, conservation of the cornea; eight days later vision improved to counting fingers at one meter. Final result, regression of the inflammatory symptoms, synechiæ, no mention of the vision, iridectomy advised.

Case 2.—Boy, 4 years old, who, one month previously, according to the statement of his father, suffered from gastric and cerebral symptoms; fourth day the right eye became congested. Present state, fever, heaviness in the head, general debility, the right lids swollen and edematous, marked chemosis, cornea clear, turbidness of the aqueous; iris slightly contracted and irresponsive to light, yellowish reflex in the vitreous. Vision completely lost. The same treatment was instituted, resulting in a retrogression of the process but no mention is made as to the final vision.

Case 3.—Weak, poorly-nourished boy of 5 years, who in November last suffered with chronic enterocolitis, which left the child greatly debilitated. About three weeks after the commencement of the trouble the eyes, especially the right, became affected, the lids inflamed and the conjunctiva injected. No treatment was undergone. Four days ago, on noticing that the child did not open its eyes, the mother raised the lid and discovered that the eye was white. Present state: Right lids edematous; conjunctival chemosis; cornea macerated and, in the lower segment, infiltrated with pus; hypopyon. Left eye similar condition, though not so pronounced. Vision completely lost in each eye. Author thinks that the child died soon after from the general infection. The author considers worthy of notice in these cases, first, the beneficial result of the treatment by silver nitrate, and second, the presence of a metastatic panophthalmitis, in the first two cases, resulting from a disturbance in digestive tract. H. M. F.

Graves' Disease.—Beaumont, W. M. (*Brit. Med. Journ.*, July 8, 1905.) Woman, aged 48, complained of proptosis of both eyes, and had had an attack of Graves' disease dating back about five years. From the history of enlarged thyroid, proptosis and breathlessness, there does not appear to be much doubt about the diagnosis. At present she has neither Stellwag's nor Graefe's sign, no enlarged thyroid and no tremor. Her vision is 20/20 with each eye. She has a pulse of 100 when she sits quietly at rest. Color sense is good, but her field of vision is concentrically contracted. The interest in this case lies in the fact that she has what has been called "the new ocular symptom" of Graves' disease—that is, she has pigmentation of the upper lids. Each upper lid is of a brownish hue, the pigmented patches being sharply defined, and strictly confined to the lids, and quite symmetrical. P. H. F.

Unilateral Proptosis and Edema of the Lids (Thrombosis of the Cavernous Sinus ?) Occurring in the Course of Scarlatina.—Werner, Louis, M.B., Dublin. (*The Ophthalmoscope*, May, 1905). The patient, a boy aged 6 years, after two days of malaise developed a mild attack of scarlatina, with only slight affection of the throat. He made good progress until the ninth day, when the temperature, which had been normal for two days, rose to 101.4° F., and he became heavy and drowsy. Eyelids of right eye were swollen and red, and the eye itself became prominent. No congestion of conjunctiva. Temperature returned to normal in a few days, but the eye symptoms persisted. When seen by the author a few days later an ophthalmoscopic examination revealed no lesion, cornea clear, pupil normal in size and reactions. The proptosis continued for two months. Recovery was complete. M. B.

Is Keratitis Ever Caused by Rheumatism?—Connor, Leartus, Detroit, (*Jour. A. M. A.*, Aug. 5, 1905), states that rheumatism, a "symptom complex," an infection, must be separated from the other causes. He classes rheumatism as acute articular and indefinite, the first having well-defined symptoms, the second shading off to phenomena hard to characterize. Experience shows that eliminative agents influence favorably both rheumatism and associated keratitis. Cushny says the salicylates increase by 12 per cent. the excretion of sulphur; augment the excretion of uric acid from 30 to 100 per cent., and correspondingly increase the leucocytes in the blood. Rheumatism chiefly attacks the fibrous tissues. There is no reason why the cornea should always escape the fate of tendons, endocardium or joints. Rheumatism may first appear in the sclera and secondly in the cornea, or primarily in the cornea, and secondarily in the sclera; or simultaneously in sclera, cornea, iris, etc. A case of rheumatic keratitis is established only when syphilis, tuberculosis, struma, local injury or infection is excluded; when it is shown that the patient suffers from rheumatism and possibly that he has had one or more previous attacks associated with keratitis, when the keratitis is non-suppurative, when the pain and photophobia are disproportioned to the corneal lesion, and when the case responds favorably to anti-rheumatic treatment after other treatment has failed. A family history of rheumatism strengthens the diagnosis.

He reports five cases. In three of them there was a clear history of recurring attacks of keratitis with rheumatism during a period of many years; the keratitis appeared during the rheumatic attack and faded as it declined; all were benefited by anti-rheumatic treatment. All were classed as rheumatic keratitis for the following reasons:

1. They started in the cornea during an attack of rheumatism.
2. Some recurred many times.
3. All other constitutional causes were eliminated.
4. All were non-suppurative.
5. Three were attended with pain and photophobia disproportionate to the corneal lesion.
6. Anti-rheumatic treatment alone favorably promoted a rapid recovery of either keratitis or rheumatism. In all these five cases the keratitis antedated other involvement of the eye; in two the rheumatism was acute articular; in the others subacute; iritis occurred only in the two profunda cases.

Of 127 answers to queries received from ophthalmologists, 67 replied that they had never seen cases of corneal disease which they could ascribe to rheumatism. Several had seen keratitis which they ascribed to gout. Sixty replied that they had seen one or more cases of keratitis which they believed due to rheumatism. He briefly reviews the opinions expressed in text-books and medical journals, and the affirmative answers to his queries regarding this condition, and sums up the following in favor of a rheumatic keratitis: (1) Cases presented in abstract of five different varieties; (2) one or more cases covering about all varieties of keratitis from each of 60 observers—all expert ophthalmologists; (3) authors in seven different standard text-books on ophthalmology; (4) and seven contributors to medical journals.

M. D. S.

VARICELLA OF THE CORNEA.—OPPENHEIMER, E. H., Berlin. (*Deutsche Med. Woch.,* 1905, No. 21, p. 833). The left eye of a girl, aged 2, became inflamed on the sixth day after the outbreak of varicellæ. Two days later Oppenheimer found the upper lid red and edematous, so that the eye could not be open spontaneously. The conjunctiva was very red and the retrotarsal fold swelled, with very few follicles, but muco-purulent discharge. The ocular conjunctiva was very much injected and showed small ecchymoses. The pupil was round, contracted and reacted very little. On the temporal inferior quadrant of the cornea, which was slightly hazy, a round vesicle, of double the size of the head of a pin, projected on a whitish-gray base. The epithelium over it was perfectly smooth and reflecting. Each time after closing the lids and opening them again, small threads of mucus adhered to the vesicle, which had to be removed in order to bring the vesicle in view. On the next day it was transformed into an ulcer, which was covered with epithelium on the sixth day, leaving a slight depression of the size of a pin's head without any irritation.

The treatment consisted in atropin, 2 per cent. xeroform salve and irrigations with boric acid solution. The fact that the affection developed at the disappearance of the exanthema does not speak against the assumption that it was a varicella, since conjunctival varicellæ have been observed to form later than those of the skin, whereas the corneal pustules in variola regularly occur during the stage in which the crusts are formed. It is also probable that the corneal varicella actually set in earlier than on the sixth day. The whole complex of symptoms, the localization in the superficial layers, which, according to Waldeyer, are to be considered as conjunctival, and the course of healing distinguish varicella from scrofulous infiltration subsequent to varicellæ. The affection is very rare. Oppenheimer found only two authors, Schmidt-Rimpler and Seitz, who mention corneal complications in varicellæ. Oppenheimer considers the affection in this case as a regular varicella of the cornea caused by endogenous or ectogenous infection by the fingers or otherwise. On the other hand are occasional affections of the cornea not complications of varicellæ, but simply sequelæ to varicellæ as they are common after measles, scarlet fever, etc. C. Z.

Ulceration of the Cornea in General Diseases.—Ellett E. C., Memphis, (*Memphis Med. Mon.*, May, 1905), discusses the various forms of corneal ulceration which may occur during the course of a general disease and which may be present either as a result of an infection of the corneal tissue, the lowered vitality of the patient favoring the spread of the infection, or the corneal lesion present may be a specific lesion of the disease.

Ellett confines his remarks largely to the description of a form of "dendritic keratitis," due to malaria, which he considers to be a trophic lesion similar to the neuro-paralytic keratitis sometimes present with other forms of neuralgia of the fifth nerve.

W. R. M.

Symmetric Swelling of Lacrimal and Salivary Glands in Their Relations to Pseudo-Leukemia.—von Brunn, M., (*Beitr. zur Klin. Chir.*, xlv, p. 225), reports two new cases from the clinic of von Brunn. One in a girl, aged 23, presented no peculiarities, while the other was complicated by lymphatic pseudoleukemia, aplasia of the bone marrow and severe anemia. It shows in comparison with the cases from literature that, clinically and histologically, the same complex of symptoms may occur with and without simultaneous pseudo-leukemia. Both affections have apparently a common cause, which so far is unknown, probably an infectious agent conveyed to the glands through the blood

C. Z.

On Senile Changes of the Macula in Arteriosclerosis.—Posset, R., Graz, (from the Eye Clinic of Professor Dimmer; *Zeitsch. f. Aug.*, 1905, xiii, p. 771), found in the right eye of a man, aged 78, with impaired vision and central scotoma, the macular region lighter and in the center minute light-yellowish and reddish-white partly glistening dots, intermixed with black pigment spots, giving the whole a checkered appearance. The foveola was characterized as a small, white, glistening spot. In the left eye (V = motion of hand at 2 inches, contraction of V. F. and central scotoma), the macular region in an extent of 2.5 × 2 diameter of the disc was partly whitish-gray, partly glaring white, and showed a refraction of +3.00, with pigment spots at the lower border. The foveola was retracted like a navel and formed a small red spot, surrounded by minute blackish pigment granules.

In the right eye the retinal arteries were a little narrower than usual, but in the left eye the vessels, after reaching the changed area were very tortuous, partly wider, partly more narrow. Sometimes their walls were so thickened that they appeared interrupted. The inferior temporal, 1 disc diameter below the disc, showed such thickening and the superior macular artery was converted into a fine red stripe, ensheathed by two white stripes. In the otherwise normal red fundus very fine white glaring dots, of which some show a slight pigmentation, were seen, especially between the lower border of the changed macular area, forming a concentric arc with it and the inferior temporal vein. From the anamnesis, the enlarged heart with systolic murmur, functional disturbances and ophthalmoscopic condition, Posset considers the affection as a senile alteration of the macula from arteriosclerosis. He discusses the various senile changes, as the senile alteration of the macula proper, drusen of the lamina vitreæ of the chorioid and retinitis circinata. C. Z.

ON OCULAR AFFECTIONS IN EPIDEMIC CEREBROSPINAL MENINGITIS.—HEINE, Breslau. (From the Eye Clinic of Professor Uhthoff in the University of Breslau; *Berliner Klin. Woch.*, 1905, No. 25, p. 772.) In the retina extensive hemorrhages are observed rendering the prognosis serious, when occurring at the posterior pole.

Much more frequently the optic nerve is affected, especially in form of simple optic neuritis, without essential prominence. It may be a distant symptom (Fernsymptom), as found, e. g., in cerebral abscess, but more frequently as descending neuritis, a propagation of the basal miningitis into the nerve sheaths. Choked disc is seldom, presumably since internal hydrocephalus, the connecting link, found at autopsies, occurs too suddenly and causes death before papillites can develop. Likewise genuine descending atrophy of the optic nerve from extension of the third ventricle is rare. More frequent are the inflammatory affections of the stem of the optic nerve, even without ophthalmoscopically recognizable optic neuritis, caused by basilar meningitic processes.

They present the aspect of basilar amaurosis or intense amblyopia leading to descending optic atrophy with the ophthalmoscopic posture of genuine, non-inflammatory atrophic discoloration of the disc. It is almost always bilateral. An objective symptom of basilar amaurosis is reflex immobility of the pupils, which, however, may also occasionally occur from increase of cerebral pressure and coma. For the diagnosis of basilar amaurosis the sudden onset of blindness is essential.

Cortical affections (hemianopia) are rather unusual.

Of intraocular complications the metastatic ophthalmia is the most important, propagated by continuity, involving mostly one eye, ending in pseudoglioma or atrophy of the globe, hardly ever in panophthalmitis, never causing sympathetic ophthalmia.

The ocular palsies are almost always basilar, more frequently unilateral than bilateral. Isolated paralysis of the abducens is the most common, but total ophthalmoplegia may occur, nystagmus and pupillary disturbances. Another symptom is the diminished frequency of winking.

In the recent epidemic in Upper Silesia, Heine examined over 100 cases of meningitis and found in 15 affections of the motor apparatus, in 10 of the optic path, and in 5 of the interior.

In critical discussion of the more recent literature the author comes to an opposite conclusion from Axenfeld, who in his elaborate paper (v. Græfe's Archiv., vol. 40, 1894) considers the prognosis with regard to life as relatively favorable. Four of the five cases (three unilateral, two bilateral) observed by Heine, were very severe; two died and two (bilateral) were expected to die. C. Z.

A Case of Traumatic Hysteria, Presenting the Aspect of Ophthalmoplegia Exterior.—Westphal, A. (From the Psychiatric Clinic in the University of Bonn; *Deutsche Med. Woch.*, 1905, No. 22, p. 859.) A miner, aged 46, suffered from traumatic neurosis after an injury of his head. He was depressed, hypochondric, discouraged, had headache, vertigo (objectively and subjectively), tachycardia, increase of mechanical, muscular and vasomotor irritability, tremor and shaking of the whole body following psychical irritations and influencing his gait. The first impression conveyed by the motor disturbances of the eyes was a complete bilateral ophthalmoplegia (not affecting the levator and iris muscles.) On closer examination this bilateral exterior ophthalmoplegia was not constant, but disappeared partially or totally by diverting the attention of the patient from his condition. This could be especially observed in monocular fixation or during ophthalmoscopic examination. The affection was psychical and the mobility or immobility of the eyes depended on psychogenous influences of which the distraction of attention was the most important. The changeable, apparently lawless aspect of the paralysis, full of contradictory symptoms, is explained by the assumption of a hysterical functional disturbance of the ocular muscles. The rapid change of total immobility and of the possibility of moving the eyes, especially the jerking movements, suggested conditions of contractures in the ocular muscles, which the author found in former observations characteristic of hysteria. Westphal considers in this case psychical disturbances of innervation dependent on attention, as the cause of these abnormal conditions of mobility (contractures) of the exterior ocular muscles. C. Z.

Some Ocular Reflexes.—Toms, S. W. S. (*Indian Medical Record,* May 3, 1905.) The ocular defects mostly productive of nervous disturbances are astigmatism in oblique or unsymmetrical axes (usually the hyperopic types) anisometropia, astigmatism against the rule and mixed astigmatism. Muscular imbalances are also potent influences.

Case 1.—A school teacher, 26 years, strong and vigorous until in June, 1900, she yielded to a nervous breakdown. She was exhausted in the afternoons and passed restless nights, there were severe occipital headaches and a tender spine with attacks of hysteria.

On examination no physical defects were found. Her vision was 20/20 for distance and she read No. 1 Jaeger at 8 to 20 inches. The muscular anomalies were 9 degrees of esophoria in distance, with abduction of 15 degrees. She had diplopia at 6 inches and both eyes deviated outward under the exclusion test.

She wore 2 degree prisms bases in for two weeks with great relief and then a partial tenotomy on the left externus was done which reduced exophoria to 2 degrees, then the other externus was operated upon with result of 2 degrees esophoria with abduction of 5 degrees, without diplopia. Her insomnia, nervous and dyspeptic symptoms were relieved. Two years later she had no return of the trouble.

Case 2.—The patient had been treated for heart disease for several years, but never complained of any eye trouble. He had bilious attacks and pain in the stomach and fainting. His vision is 20/20 and he accepts + .75 cyl. axis 90 degrees. Muscular tests show homonomous diplopia, with an excessive convergence esophoria.

Prisms relieved him of much nervous tension. The prisms were increased with entire absence of all symptoms.

Case 3.—Patient belongs to a pronounced nervous family. He has a pronounced spasmodic tic affecting the facial and cervical muscles of the left side mostly. His eye findings were a compound hyperopic astigmatism, against the rule, with 9 degrees of esophoria, adduction excessive and abduction deficient. Under a cycloplegic the vision was brought from 20/200 to 20/15 with + 2.75 = + .75 cyl. ax. 180 degrees.

After wearing these lenses the spasmodic tic entirely disappeared. (How familiar these brilliant results sound.—Reviewer.)

F. A.

The Value of the Recognition of Errors of Refraction in Functional Diseases of the Nervous System.—Fisher, Edward G., New York, (*N. Y. Med. Jour.*, July 22, 1905), thinks there is no rational reason for supposing that eye strain from ametropia can induce such well-defined diseases as epilepsy, chorea, neurasthenia and melancholia.

The oculist is not expected to have such a knowledge of these diseases, either pathologically or clinically, as would make his opinion of any special value, and, therefore, his statements and opinions should be taken only in such a sense as from his limited horizon of observation a partial understanding of these conditions renders possible. It is of little value, in argument on subjects of this character, to bring forward a series of cases, stating that in these instances a cure was effected. There is always present in the mind of the reader a doubt as to whether he would have agreed with the diagnosis. Again, functional diseases, we know, are subject to cure by the most bizarre treatment, even suggestion, and also that their very nature makes variation in their course variable. The factor of doubt also remains as to how long such improvement remains, and the difficulty of following them up. We must, therefore, consider the nature of the diseases claimed to be cured, and reason out if such a course can possibly so influence them.

From this *a priori* reasoning the conclusion is drawn that the nature of the nervous affections mentioned renders an ocular origin improbable. Correction of eye strain is, of course, advisable on general principles and may be of value, symptomatically, but it effects no cures in epilepsy, chorea or neurasthenia. P. H. F.

Malignant Edema Without Pustule of the Lower Eyelid; Bacteria of Charbon Found; Cure.—Morfau, E., Interne of

Lyon Hospital. (Clinic of Professor Rollet: *Revue Générale d'Ophtalmologie*, May 31, 1905.) Moreau relates a case of the rare form of malignant edema and gives bibliography. The case occurred in a hide dresser, 51 years old, and he was seen first March 27, 1905. Then there was marked edema of left eyelids, especially of lower. The surface, which was bluish, was of soft consistence, but digital pressure left no pitting. The surface was not red, nor was skin thickened; and there was neither scar nor vesicle to be seen. There was a limited plaque of induration near inner angle of lids quite hard and quite limited. No painful osseous orbital point; the site of lacrimal sac normal and pressure on it produced no fluid; the globe of eye normal; no conjunctival discharge; no chemosis; no exophthalmos; the patient had not suffered from dental troubles, and the buccal and nasal cavities and the sinuses healthy. There were no ganglionic enlargements. Temperature 37.8 C.; pulse 86; no chills and no vomiting; no pain. Notwithstanding the negative results of the minute exploration of the organs in the vicinity of the edema, it was very evident from the facial pallor and facial aspect that there existed a malignant affection. The lower lid was punctured and a few drops of blood obtained and a culture made. Patient stated he had noticed at first a slight swelling of left lower lid, no malaise; had worked the following day; eyelids had not been injured; had never applied his hands to eyelids. A wet sublimate dressing was ordered. Condition much changed day after admission to hospital; local symptoms developed very markedly; tumefaction increased on left side of face; the lids were very voluminous and it was impossible to examine the globe. The skin was of normal tint and without lymphatic zones; no scars on lids, though there were yellow vesicles on lower. Patient complained of intense itching of lower lid, but no pain. Left temporal region was leather colored, extending to the region of the ear. General condition bad; color leadlike, tongue furred, chills. A large incision was made over the left temporal region down to the bone; no pus; no serous fluid freed. Condition in the evening alarming; temperature 40 C., pulse 114. Intellect clear; edema reaches as far as bridge of nose and over to lower lid of right eye. Rollet made large incisions with the thermocautery as far as the limit of the edema. An injection of oil of mustard was made subcutaneously in order to provoke an abscess of fixation. Cultures showed presence of charbon bacteria. Temperature fell next day to 39 C., edema less, no trouble with deglutition, but in the evening dysphagia began. March 31 amelioration and recovery resulted. B. E. F.

SUPPURATIVE TENONITIS. OCULAR METASTASES.—JOCQS. (*La Clinique Ophtalmologique,* May 25, 1905. Jocqs states that though many of the cases of these affections are termed "rheumatic," it is probable that some of them should be classed as infectious metastases. If infection should be admitted as the cause in certain cases of serous tenonitis, it would confirm the recent observations of Roux, and the etiology should not be held in doubt in suppurative tenonitis in patients suffering from general systemic infection, as was the case which Jocqs relates, as follows: Patient, 73 years old, first seen in June, 1904, on account of a slight trouble in the left eye, in which there was only light perception. Patient did not suffer pain, the eye was slightly red, no photophobia, eyelids normal, slight pericorneal injection, other portions of eye normal in color, cornea transparent, slight hypopion in anterior chamber,, about 1 mm. in height, pupil was immobilized by old posterior synechiæ, pupillary area covered by slight exudation, tension normal. Patient had a vague recollection of having had a slight painless redness of eye many years before; his physician reported that for many years the man had had bladder trouble, with frequent desire to urinate. There was enlarged prostate and urinary retention. Sound was passed thrice in 24 hours without amelioration. Prognosis grave. Some days after Jocqs first saw the case left eye became completely covered by swollen edematous lids; after raising them the cornea was found to be transparent, but surrounded by an enormously thick chemosis; no hypopion, movements of globe completely abolished, no pain when efforts at motion are made, the globe is protruded and seems augmented in size, but painless. The general condition of patient was very bad, temperature between 39 and 40 C., low delirium. From the fact that there was no pain, Jocqs did not believe that orbital inflammation or tenonitis existed, but feared that orbital phlebitis did. Jocqs saw the case eight days later and the general condition was still bad, but the eye was much better. There was, however, a large collection of pus situated beneath the insertion of the superior rectus, the swelling of lids and chemosis diminished and the eye protrusion less. In spite of diminution of unfavorable eye symptoms patient's general condition was not improved, and he died July 15.

Jocqs believes several points in this are well worth considering attentively; the condition of the eye before the appearance of the tenonitis is one. When first seen there was a small hypopion and slight circumcorneal injection, for which the patient came for advice. There was an old and complete pupillary synechia, and exudation in pupillary field, and there had been a subjectively symptomless and torpid iritis, which is rare in the male, but frequent in the female near the menopause, it being readily believed that there is a correlation between the utero-ovarian system and the uvea. In these latter conditions there is not infection, but toxemia which results from defective emunctories in not removing excrementitious products.

Jocqs states, too, that which is of interest in these cases is the fact that the ocular infections have for a point of departure the genito-urinary trouble, though he would exclude from his paper those eye affections which involve the uveal tract and which are of uterine or blenorrhagic origin. He considers that the form of tenonitis he reports as being due to general infection, it being important to insist on the fact that the urethra and bladder can become the point of departure of such general systemic trouble with "retentissement" upon the iris. A characteristic case was reported by de Brun (*Presse Medicale,* 1893) in which the attack of iritis recurred six times in seven years, each attack following urinary trouble dependent upon urethral stricture. This was similar to Jocqs' case, it being probable that the former attacks of uveitis had left posterior synechiæ, and finally resulting in the suppurative tenonitis. The cases known as metastatic serous tenonitis which supervene in the course of a general infection are now quite numerous; and it is also now so in regard to purulent tenonitis. It is true that certain cases of periocular suppurations which were not tenonitis have been published under another name; as a proof of it may be mentioned the case of Trousseau, which was similar to Jocqs', the latter quoting it in full in his paper. En résumé, Jocqs states: Suppurative tenonitis is rare; it may be met with in the course of infectious diseases, influenza, typhoid and eruptive fevers, etc.; it may be a complication of any infectious diseases, especially those having the genito-urinary system as a point of departure. In these cases the infectious metastases appear to attack primarily the irido-chorioidal system and later the capsule of Tenon. Suppurative tenonitis is not of itself serious, but the accompanying irido-chorioiditis leaves indelible results. Suppurative tenonitis is not painful; it is this which distinguishes it from ordinary phlegm of the eye or orbit. In the presence of an exophthalmos with chemosis, edema of the lids without pain in the course of an infectious condition, we should think of tenonitis. B. E. F.

THE ENDOGENOUS OR METASTATIC ORIGIN OF INTRAOCULAR PURULENT INFECTION.—TERSON. (*La Clinic Ophtalmologique,* June 10, 1905.) Terson reports an interesting case of intraocular suppuration, occupying the whole of the posterior segment of the left eye, which followed sharply where the general condition would seem to have indicated typhoid fever. Terson observed that the eye symptoms appeared 13 days after a traumatism of the left side of the abdomen, without erosion and without any eye injury at the time of the accident. He concluded that he had an infectious process—a secondary infection due to the dissemination of septic embolisms in the blood. It is important essentially to the physician to make known the gravity of secondary infection; for not only is the vision of the involved eye rapidly lost, save in a few rare exceptions, but also the form and volume of the organ markedly changed. Moreover, there is greater danger to life by the migration from the general infection to the nerve centers, often producing mortal meningitis. The number of facts of this kind are more frequent than the details of the mode of evolution, which latter are comparatively indefinite. The obscurity of the connection, the origin, etc., of the infection in Terson's case induced him to publish it. The patient was a man of 33 years of age, of delicate physique; there were no indications of tuberculosis, though the father died from that trouble. The mother was still living. Patient had had, from his sixth year, abscesses in the ears, especially the left, the nature of which were not known, though he never had fever or loss of appetite. On October 5, 1903, he received a kick from a horse in the left flank which produced violent pain. In about a week he became very ill, had fever and chills, cephalalgia, slight epistaxis and diarrhea, with gurgling in right iliac fossa, so that it was believed typhoid fever existed. On the third day after the injury patient noticed a heaviness in left eye, with diminution of vision, which became more marked the following day, and pus was discovered the next day in the anterior chamber, with further reduction of sight, so that now there was only light perception: the eye appeared enlarged; there was chemosis. On the seventh day from the appearance of the pus, the patient was referred to Terson, who examined and found the vitreous yellow, though the lens was still transparent. Pus at two points had perforated the sclera to the right of the superior rectus muscle. Frequent bathing of the eye was had and antiseptic applications made, without hope, however, of saving the eye. Even when the pus formation took place there was little pain in the eye. The organ atrophied and remained painless. There can be no doubt of the diagnosis. The patient, from the commencement of the suppuration in the posterior segment of the eye, had no change of color in the iris, and the cornea and lens had not lost their normal appearance. The continued absence of pain proved that the iris and ciliary body were not involved in the course of the infectious process. The initial systemic depression and chill prove that the patient had a febrile movement, which later might have been confounded with typhoid fever. The protrusion of the eye and the phlegmonous conjunctivitis which existed when the case was first seen going to show that the eye lesion was a secondary one. Proof was had by the serum test that the general infection was not typhoid. Mackenzie, who was the first to fully describe this infective condition in his treatise, now nearly forgotten, did so under the name of phlebitic ophthalmia, said: "There is ground for believing that certain cases described as phlebitis following typhoid fever have only simulated typhoid." Terson insists that the idea of enteric cause should be eliminated in many of these eye lesions arising from general infection. Terson adds the bibliography. B. E. F.

GLAUCOMA.

PRIMARY GLAUCOMA FROM OCCLUSION OF THE PUPILLARY FORAMEN CAUSED BY THE CRYSTALLINE LENS.—SPECIALE-CIRINCIONE. (*La Clinica Oculistica,* March, 1905.) Many years ago Manfredi published a complete work in which he emphasized the fact that secondary glaucoma could be caused by mechanical occlusion of the pupillary foramen from luxation of the crystalline lens. He thought it very probable that this occlusion was one of the first factors in the increased tension of primary glaucoma. The theory of Manfredi is supported by experiments on rabbits in which the occlusion of the pupillary foramen with celloidin produces glaucoma with all its symptoms. The writer had occasion to study particularly some cases of primary glaucoma and convinced himself that Manfredi's theory was true—that when the symptoms are not explained on the theory of an impediment in the lymph circulation, they are produced by the energetic pushing backward of the pupillary border against the anterior surface of the lens. In support of this he cites the case of a patient, 45 years old, emmetrope, who, following a great grief, was taken with pain in the right eye. During the night and the next morning vision was diminished. Acute inflammatory glaucoma was diagnosed. T. was + 3. Pain was severe. One per cent. eserin was instilled, with the result that a few hours later the pain became intolerable, the eye was more injected, the cornea more opaque and vision reduced to light perception. Paracentesis was followed by the escape of no fluid from the anterior chamber, nor were the symptoms modified in any manner. The writer was convinced from this that there was no fluid in the anterior chamber—that the chamber did not exist. Twenty-four hours later an incomplete iridectomy was performed. When the iris was seized with the forceps and drawn towards the corneal wound, there was an abundant escape of fluid. T. was decreased and the media cleared somewhat. In the left eye the anterior chamber was less light and to accommodation. T. was not elevated, but it was deep than normal, the pupil large and slightly movable to strong thought best to use pilocarpin as a prophylactic. Two drops were instilled. Three hours later the patient complained of great pain in the left supraorbital region and a dimness of vision. Examination revealed the same group of symptoms observed in the right eye, but in a milder degree. There was acute glaucoma in the left eye; the iris seemed pushed forward against the posterior surface of the cornea, the pupil was dilated and T. was + 3. Iridectomy was performed at once. As in the other eye the corneal incision was followed by the escape of no fluid. When the sector of the iris was drawn towards the corneal wound, fluid escaped from behind the iris. As an experiment the iris was not removed, but 2 drops of a 1 per cent. solution of eserin and pilocarpin instilled. The pupil contracted and T. was lowered. With the index finger the eyeball was carefully massaged over the upper lid for two minutes and a bandage applied. Sixteen hours later there was no anterior chamber, the pupil was dilated and T. was + 1. Every day a 2 per cent. solution of pilocarpin was instilled morning and evening. For three days the condition of the eyeball was unchanged, while the right eye was progressing towards cure. Since the dilated pupil persisted in the left eye, two drops of a 2 per cent. solution of eserin were used. Forty minutes later there was pain which rapidly grew worse. On removing the bandage acute glaucoma was diagnosed. An iridectomy was performed and was followed by the escape of a few drops of fluid. T. at once fell to normal. In both eyes shallowness of the anterior chamber persisted. The interesting points in this case were, (1) the non-escape of liquid after opening the anterior chamber and the escape of the same after the withdrawal and removal of the iris from the anterior surface of the lens; and (2) the increase of intraocular tension after the installation of a myotic. It seems reasonable to believe that in this case there was an increase of volume in the vitreous through edema, which tended to a more rounded form of the same, with consequent diminished size of the patellar fossa and pushing forward of the lens and the iris until the latter was against the posterior surface of the cornea. The circulation of the lymph in the posterior ocular segment through the pupillary foramen was obstructed by the pushing of the pupillary border against the lens and through the forced inertia of the pupil while the fluid of the anterior chamber escaped externally, the tissues being sound and the lymphatic way at the angle of the iris pervious. The ultimate result of this modification was the diminution or disappearance of the anterior chamber and the stopping of the ocular lymph behind the iris or in the posterior chamber. In this case the primary glaucoma was caused by the hindrance to the circulation of the ocular lymph determined by the stoppage of the pupil by the lens pushed forward by the edematous vitreous. It is clear that in this case the use of myotics was injurious. R. H. J.

GLAUCOMA AND SCLEROTOMY.—DIANOUX. (*Annales d'Oculistique,* February, 1905.) This article is in answer to Abadie, who proclaimed the failure of sclerotomy and defied its partisians to show cases of cure of even a few weeks old by its means. The author stated that having compared the treatment by iridectomy and that by sclerotomy for twenty-four years, he has abandoned the former, and confines himself exclusively to the latter in both the chronic and the acute forms of the disease. He asserts that sclerotomy as usually performed is simply a parecentesis, and describes in contrast the following method as the proceeding which he employs: He contracts the pupil as much as possible with eserin, and instills a collyrium of cocain and adrenalin. Then with a very narrow von Græfe knife, he makes a puncture immediately in front of the iris; the efferent vessels of the canal of Schlemm indicate the point of choice. The counter-puncture is also made immediately in front of the iris in such a way as to circumscribe a third of the cornea. The aqueous humor is allowed to escape by rotating the knife slightly about its axis. The wounds of puncture and counter-puncture are enlarged to about 3 mm. in size. The point of the knife is then withdrawn into the anterior chamber, and made to cut a groove in its periphery, extending to the point of puncture. This, he says, is the procedure of de Wecker. The author considers the operation merely the first step in the treatment, and says that unless the disease is pursued further the result will be only transient; it merely prepares the way for massage and miotics. The evening of the operation, or the next morning, he removes the dressing, and if the anterior chamber is reformed, he performs a massage that is sufficient to reopen the wound and to evacute a part of the aqueous humor beneath the conjunctiva. He repeats this procedure at 12 hours' intervals for four or five days' time, and at the same time, he instills a collyrium of eserin, pilocarpin, and adrenalin. On the seventh day, he discharges the patient after teaching him how to continue the use of miotics and massage. He believes that, whatever theory of glaucoma we may adopt, we must admit that its origin is an arteriosclerosis, or, rather, in the alterations of nutrition which accompany this condition. He says, until we have discovered the fountain of youth we can do little or nothing for arteriosclerosis, but as we may live a long time with arteriosclerosis, so we may see a long time with glaucoma. He believes that we can only restore tension to normal and keep it there. He has never seen a case of chronic glaucoma in which increase of tension was wanting, and does not recognize atrophy with excavation. Iridectomy, he states, should be abandoned because it excludes early massage and diminishes the efficacy of massage by mutilating the iris.

In addition to the local treatment of the disease, he recommends the use of quinin alternating with tincture of strophanthus, and from time to time the use of the constant current with injections of strychnin.

The author's confidence in the operative part of this complicated procedure seems to be based entirely on the rather dubious thing of "cicatrice or filtration," and after all he has not responded to Abadie's challenge by reporting his cases. G. C. H.

GLAUCOMA AND SCLEROTOMY.—ABADIE. Paris. (*Annales d'Oculistique*, March, 1905.) Abadie replies to Dianoux, and renews his statement that sclerotomy of itself has proved useless in glaucoma, and that there is no proof that the treatment by massage, miotics, iodids, electrization, etc., would not have been as effective without it. The author claims that iridectomy has given brilliant, positive, and permanent results, and protests against any suggestion to abandon it. G. C. H.

A NOTE ON THE TREATMENT OF SIMPLE GLAUCOMA.—HAMILTON, T. K., M.D. (Dublin); F.R.C.S.I., Adelaide, South Australia. (*The Ophthalmoscope*, May, 1905.) The author differs from Barry in his opinion that the use of miotics in simple glaucoma is useless; that sclerotomy does not do much good and that small iridectomies are not worth performing. The history of a case is reported of simple glaucoma in both eyes in which a small iridectomy in one eye and mycotics in the other has held the process in check for eight years. He recalls another case where sclerotomy proved of value after an iridectomy had failed. He believes the reason some solutions of miotics and mydriatics irritate the eye is because they are septic. To prevent their becoming septic he recommends that these drugs be dissolved in solutions of 1 per cent. chloretone or 1:1000 trikresol. He has made it a practice to so prepare solutions of cocain, homatropin, eserin and atropin. Conjunctival irritation from the use of these solutions is unknown in his practice. M. B.

Traumatic Glaucoma.—Amos, A. R. (*Iowa Medical Journal*, July 15, 1905), discusses the causes of glaucoma, especially of those cases due to traumatism. He draws attention to the influence of inflammation, swelling and edema of the ciliary body in closing the space between it and the lens. He describes the successive stages through which many wounded eyes pass to eventual glaucoma and cites cases. M. D. S.

On the Influence of Psychical Effect on the Origin of Acute Glaucoma.—Wicherkiewicz, B. (*Post. Ok.*, 1905, No. 3.) Bad news, losses in playing cards or on the stock exchange, theatrical performances, antiglaucomatous iridectomy of one eye may elicit an acute attack of glaucoma, of which Wicherkiewicz gives instances from his practice. The connection lies in the emotional mydriasis. He describes a glaucomatous attack in an elderly woman on the eve of an intended cataract operation. It was cured by miotics with lasting deterioration of perception of light and projection. The cataract was not extracted on account of the danger of chorioidal hemorrhage. Wicherkiewicz ascribes the atattack to the great excitement on account of the contemplated operation, without ignoring the intumescence of the cataract as a possible adjuvant. K. W. M. translated by C. Z.

Antiglaumatous Operations and Subsequent Massage of the Eyeball.—Wicherkiewicz, B. (*Post. Ok.*, 1905, Nos. 4 and 5.) A well established filtration scar is an important factor in antiglaucomatous iridectomy and sclerotomy. Wicherkiewicz secures this by systematic massage of the eyeball after every glaucoma operation. Both index fingers are applied on the upper lids at the region of the wound and moved too and fro in horizontal direction, without producing pain, twice daily. At the same time miotics are used. Wicherkiewicz thinks that sclerotomy alone could have no decisive action. K. W. M., translated by C. Z.

GLAUCOMATOUS CLOUDINESS OF THE CORNEA.—SILEX, P., Berlin, (translated by Dr. M. L. Foster, New York; *Archives of Ophthal.*, July, 1905), differs from the opinion of Leber, Fuchs, Birnbacher, Czermak, Arlt and others that the smoky, dull, stippled appearance of the cornea in acute glaucoma is due to an edema between the epithelial cells. The author believes that the cloudiness depends upon a stretching of the cornea, whereby doubly refracting elements are induced to appear, which cause a multiple reflection of light. Silex bases his opinion on experiment, clinical observation, and pathological anatomy. W. R. M.

TREATMENT OF CONGENITAL AND INFANTILE HYDROPHTHALMUS.—SCHOENEMANN, CARL, St. Johann-Sarbrücken, (translated by M. L. Foster; *Archives of Ophthal.*, July, 1905), gives the clinical histories and results in seven cases of infantile hydrophthalmus, in all of which an iridectomy was done and the cases kept under observation. Schoenemann made the incisions through the cornea, avoiding the peripheral section and had no bad results in any of the seven cases. All the operations were performed under general anesthetic, the eyes were bandaged for 8 or 10 days and eserin instilled at each dressing. The cases were kept under observation from a period of from 3 to 6 years, and the author believes that these cases should be considered cured when the permanency of the arrest of the hydrophthalmus has been observed for so many years. He considers the curative factor to be the iridectomy and says the earlier it was undertaken the more satisfactory were the results and that the operation is not dangerous if performed according to Schweigger's method.

W. R. M.

INJURIES.

A CASE OF CATARACT DUE TO INDUSTRIAL ELECTRIC DISCHARGE.—DESBRIERES and BURGG. (*Annales d'Ocultistique*, February, 1905.) The case described by Desbrieres and Burgg was that of an electrical workman who received the discharge of an alternating current of twenty thousand volts. After loss of consciousness for half an hour, the patient revived under treatment by rythmic traction of the tongue, artificial respiration, etc. He had more or less deep burns locally on the right side, particularly in the upper extremity, and on the face. The acute inflammatory reaction of the burns of the face occasioned an intense edema of the lids which made it impossible to examine the eyes for a period of fifteen days. The burns were healed, the right wing of the nose was partially destroyed, the cheek bore traces of a burn of the third degree, and the upper lid showed cicatrices. In the right eye, the conjunctiva, which had been violently chemosed after the accident, presented slight traces of burns. The iris was normal. In the lens there were patches of opacity consisting of numerous spots, some punctuate, and others linear. These were scattered over the surface of the lens, but were more abundant in the region of the equator. They were subcapsular. The posterior surface of the lens was free from opacity. Visual acuity was nearly normal (eight-tenths), though the patient saw objects as if through a mist. A year later there had been no change.

This absence of progression of cataract, the authors state, has been shown to be one of the principal characteristics of electrical cataracts. They may remain for years without local change, or may even spontaneously retrograde. They are usually what is known as "partial cataracts."

Electrical cataract is very rare. Gonin could find only twelve cases from lightning recorded, and the authors of this paper know of but one other from industrial electricity. The lesions in the two forms they say, are the same. As to the pathology, it is not a question of the action of the ultraviolet rays of electricity or of the ill-defined action of heat opacifying the lens through an intact cornea. It must be, they believe, a special action of the current. Perhaps the intense iridociliary hyperemia plays an important rôle. The osmotic interchanges between the vitreous and the aqueous humors on the one hand, and the crystalline lens on the other, are intense, and depend upon the ciliary vessels; it is therefore not impossible that ciliary engorgement may produce lesions of the crystalline epithelium and the subjacent layers. Neither is it impossible that the current may induce (as has been experimentally shown), a subepithelial albuminous coagulation followed by a degeneration of the epithelium, and finally by a penetration of the aqueous humor; or that without coagulation, it may so alter the aqueous humor chemically as to make it unfit for osmotic action. Still another hypothesis is that the current acts traumatically. G. C. H.

FOREIGN BODY IN THE IRIS.—ALVARADO, E., Valladolid. (*Archives de Oftalmologia,* April, 1905.) The author reports a case of tolerance of a foreign body imbedded in the iris for more than three decades. He first saw it in June, 1878 (or 1879) at which time there could be seen in the lower outer part of the iris close to the pupillary border a small red-colored glistening spot, elevated and irregular in shape. There were no inflammatory symptoms and the patient said it did not trouble him. Being interested in the final outcome of the case, the author, in response to recent inquiries, learned the following particulars: In August, 1869, some 10 years previous to the time he first saw the case, following the discharge of a fowling piece, the entire cap entered the right eye; the following day there was some slight inflammation, which soon disappeared after the use of a collyrium. A surgeon advised its removal at that time, but the operation was not consented to. During the following 8 years the cap could be seen imbedded in the iris, after which time it gradually disappeared, being entirely invisible at the end of another 8 years. The author thinks in all probability the entire cap did not enter the eye, but merely a part of it. Vision is somewhat reduced owing to some ocular trouble during childhood. The patient, after a lapse of 32 years, has the same visual acuity as before the accident and does not suffer from the slightest inconvenience. At present the foreign body can not be seen either by oblique illumination or with the ophthalmoscope; there is a slight opacity in the cornea representing the point of entrance. H. M. F.

INDIRECT INJURIES OF THE OPTIC NERVE.—EVANS, J. JAMESON, Birmingham, (*Brit. Med. Jour.*, July 8, 1905), notes that cases of loss of vision in one or both eyes, following blows or falls on the head, have been recorded by several observers. As a rule the loss of sight is complete in one or both eyes; and though Nettleship says it may be incomplete, Evans can find no detailed record of such cases. Apart from their apparent rarity the following cases are of interest in that they seem to show that a special type of incomplete unilateral blindness is apt to result from blows in the region of the external angular process of the frontal bone. The sequence of events in these cases was as follows:

1. A more or less severe blow in the region of the external angular process of the frontal bone.
2. Sudden impairment of vision on the side of injury.
3. Loss of the greater part of the temporal field of vision on the same side.
4. Absence of ophthalmoscopic changes for the first few weeks, followed by atrophy of the nerve head on the injured side.

5. Central vision may be almost completely restored, but the limitation in the field of vision remains practically and permanently the same.

The nature of the lesion in these cases is very problematical.

The following may be mentioned as possible causes of such changes:

1. Fracture extending through the optic foramen.
2. Laceration of the nerve by a detached and displaced anterior clinoid process or some other spicule of bone.
3. Hemorrhage into the sheath or substance of the optic nerve.
4. Limited contusion of the optic nerve.

In the cases recorded, the lesion must be one of limited contusion of the nasal fibers of the optic nerve by *contrecoup.* The nerve on the side of the injury is driven against the inner boundary of the optic foramen, whilst the nerve on the opposite side is driven against the outer wall of its foramen. That the nerve on the opposite side does not get bruised is in the main due to the protection given to it by the ophthalmic artery which winds around its outer side from below.

Assuming such an immediate cause for the symptoms mentioned, the course and prognosis of the cases can easily be deduced. A certain number of fibers are permanently destroyed (functionally) at the time of the accident. The more centrally placed fibers are not so extensively damaged and partly recover their function, as shown by the improvement in central vision. The atrophy of the nerve is apparently not progressive, and no increase in the limitation of the field need be feared.

Generally speaking, we may expect a considerable improvement of central vision in those cases in which there is a fair central vision immediately after the accident, but little or no change for the better or for worse in the field of vision. P. H. F.

SUDDEN BLINDNESS FOLLOWING ORBITAL INJURIES.—DECHERD, H. B., Galveston, (*Med. News,* July 8, 1905), reviews the subject of nerve atrophy following blows or falls upon the orbital margin (with or without demonstrable fracture) or upon other parts of the skull (contrecoup), penetrating or punctured wounds involving the orbit, but not the eyeball itself, and, occasionally, falls upon the feet or buttocks.

The underlying factor is a fracture or fissure of the walls of the orbit, involving the optic foramen or sphenoidal fissure, inducing either direct trauma of the optic nerve, or else hemorrhage into its sheath, with subsequent pressure from blood or inflammatory exudate. In the last, i. e., exudate, the onset and progress of blindness would likely be gradual. Laceration of cranial vessels, vessels of the sheath, or of the central retinal vessels might be responsible for the hemorrhage. Should the fracture involve the middle fossa, a direct injury of the chiasm or optic tract or an extravasation nearby, could easily produce visual impairment of both eyes. A localized meningitis might effect a similar result. Furthermore, it is easy to see how a penetrating foreign body might be directed to the apex along the orbital walls, although these are fairly thin. According to Morton, the inner wall is least protected, and unless the force is perpendicular to its plane, it is directed to its apex. Lacrimal sac and ethmoid involvements are apt to supervene upon trauma of the inner wall. Penetrating fractures of the roof are quite common, and often fatal.

That so few of these cases are correctly diagnosed is surprising, after a perusal of Callan's and von Hölder's statistics. The former cites 25 occurring in his own practice, with autopsies. Callan thus explains the nature of the traumatism. "The frontal bone unites with the nasal, maxilla, lacrimal and ethmoid bones by a continuous line of sutures, until the lesser wing of the sphenoid is reached; and at this point the suture line bifurcates, forming an obtuse angle. Quite near the apex of the angle is the foramen opticum. The jar made by the blow would find its weak point along this line of sutures; and the first resistance would be at the bifurcation adjacent to the foramen opticum. The movement or jar could not follow both lines with equal force at and beyond the bifurcation; consequently the unequal strain would result in fracture of the bone into the foramen opticum, causing compression of the optic nerve and sudden loss of vision to the eye."

Berlin, quoting von Hölder's 1241 cases of skull fracture, found 86 of the base; 79 of these were through the orbital vault, 63 involving the optic foramen. The fracture was always through the upper wall, and sometimes also through the inner wall of the foramen. In 42 there was hemorrhage into the nerve sheath, but never without fracture of the bony canal. Hence, it can be inferred that in many skull-base fractures, involvement of the orbit escapes notice entirely, either because the patient dies and the autopsy (if any) is not thorough; or, also, because the other symptoms mask those of the eye. Later on, when atrophy is discovered, it is usually ascribed to some other cause than fracture (reflex, direct injury to nerve, etc.). In addition to the cases already noted, Hewitt (System of Surgery) notes 68 fractures of the base, 23 extending into the orbit. Indeed, fracture of the walls of the orbit, usually involving the optic foramen, have, on close clinical study and postmorten investigation, so often been found to be the basis of sudden blindness following orbital injuries that it may practically be regarded as a *sine qua non.*

P. H. F.

TRAUMATIC LESIONS OF THE EYE.—MILLER, FRANK W., Los Angeles, (*Jour. A. M. A.*, Aug. 5, 1905), calls attention to the fact that ocular traumatisms are becoming more frequent with the increase of mechanical appliances, rapid transit, etc., and the more general use of chemicals and gases. The increase of knowledge among the laity also brings certain cases to us that a few years ago would have sought no relief. He strongly advocates cyanid of mercury, used subconjunctivally, according to Darier's suggestion, and also calls attention to the great value of dionin in certain cases. In non-penetrating recent cases an expectant attitude can be assumed, but in these only, and never when penetration has taken place, as infection is then probable. The introduction of iodoform into the interior of the eye was also referred to, but personally its use had been disappointing.

M. D. S.

SOME EYE INJURIES AND THEIR LESIONS.—HEATH, F. C., Indianapolis, (*Jour A. M. A.*, Aug. 5, 1905), presents three groups of three cases each, representing three serious forms of injury worthy of our attention. The first group comprises cases of foreign bodies in the lens which show that, while a foreign body may remain quiet in the lens for years, the eyes are still in danger and should be kept under observation. The safest course in such conditions would seem to be enucleation, reserving the attempts to remove the lens and foreign body with preservation of the ball, for those cases in which the metal has not been in the eye long enough to set up trouble. In one case with symptoms of sympathetic irritation present, enucleation was certainly the best procedure, the lens being absorbed, the eye blind from fundus lesions, and an attempt to remove the steel with a magnet being unadvisable. The second group comprises cases of foreign bodies in the iris. He states that the iris is very tolerant of foreign bodies, but their presence, nevertheless, is a source of danger and such patients should be under skilled observation. In one case he made a crucial incision towards the foreign body, prolapsed the iris, and removed the piece of steel successfully. The resulting scar was not nearly so large as he had anticipated. Thirdly, he described the wounds in or near the ciliary region and stated that here danger lies more in position than size of wound. He is persuaded that the safest course, when prolapse is in or near the ciliary region, is to resort to prompt surgery. M. D. S.

THE DIFFICULTIES ATTENDING DIAGNOSIS OF ASEPTIC FOREIGN BODIES IN THE ORBIT.—BLACK, NELSON MILES, M.D., Milwaukee. (*Ophthalmic Record,* April 1905.) A case is reported of a man who sustained an orbital injury from falling upon a piece of wood while hunting. The eye immediately became swollen and the lids closed. He was seen a week later by the author. His condition and the subsequent course of the case served to illustrate the following facts:

1. A foreign body of considerable size may gain entrance to the orbit, resulting in complete loss of vision and motion to the eye, with apparently no macroscopic traumatism to the globe, or adnexia, and leaving no trace of wound of entrance.

2. The patient will be unaware of the existence of anything in the orbit, as, after recovering from the first sharp pain of the blow, there is little discomfort.

3. The eye is usually not seen by an aouhpthr memftfli r(some time has elapsed, and the patient discovers the eye is blind, or there is no letup of the symptoms.

4. When seen, the patient usually presents an eye only moderately inflamed, with more or less exophthalmos, generally some limitation of motion, little or no actual pain, vision diminished or lost, and a history of having received a blow on the eye from some flying object.

5. This class of cases, as a rule, are seen only in those coming from rural districts.

6. The orbital tissue is particularly immune to infection, or else the foreign bodies that gain entrance into the orbit outside of the crowded city districts are of a much less septic character.

The case reported was under observation three months, and during the greater part of this time the orbit contained a piece of wood, which, when removed piece-meal, proved to be 22 mm. long and 7½ mm. wide. During the greater part of the time there were no symptoms which warranted exploration of the orbit. The author presents the question, whether saving a sightless eye with fair movement, warranted the time expended upon it, and if it would not have been better to have enucleated the eyeball early, and thus economically have rendered him greater service?

M. B.

Injury to the Eye by Potassium Permanganate.—Powell, Hugh F., London. (*The Ophthalmoscope*, July, 1905.) Two cases of burn of the eye and eyelids with permanganate of potassium crystals are reported. In each case the lids were ecchymotic and swollen, the lashes were destroyed and the ocular conjunctivæ highly inflamed. Both recovered in about ten days after thorough cleansing of the parts and using castor oil in the eyes. M. B.

Obstetric Injuries of the Cornea.—Thompson, Ernest, M.A.M.D., Glasgow, and Leslie Buchanan, M.D., Glasgow. (*The Ophthalmoscope,* June, 1905.) It has been the fortune of the writers to meet with a considerable number of cases of obstetric injury to the eye of the new-born child in the course of a comparatively short period of observation. In a large proportion of these the cornea has been involved in a peculiar manner, which appears to be rare in localities other than Glasgow. That this localization is dependent on the frequency of rickets, with marked pelvic deformity and consequent necessity for forced delivery, has been suggested by them already. They published the reports of six cases during the years 1902 and 1903. They now report nine more cases in which the corneal lesions alone are dealt with. Corneal traumatism is a rare complication of assisted labor. It results from pressure during a prolonged second stage, which pressure is due either to some form of obstruction in the maternal passages, to compression by forceps, or to both factors combined. One case is cited in point where traumatic keratitis developed in a child whose delivery was difficult because of its head, arm and cord being crowded into the passages together. Forceps were not used. These corneal lesions are divided into two classes: (1) A diffuse opacity which is temporary. (2) A permanent opacity which takes a linear form and passes vertically, obliquely, or horizontally across the whole or a part of the cornea, in a straight or curved manner or concentrically with the limbus. In most cases there is more than one linear opacity. The first form occurs with comparative frequency and is due to edema. It may occur alone or in conjunction with the second form. The second form is due to rupture of the posterior elastic lamina of the cornea and the subsequent formation of fibrous tissue. It is usually associated, during the first days or weeks after birth, with a general corneal edema (first form), which may cause a uniform opacity sufficiently marked to mask the appearances due to rupture of the elastic lamina. In the total number (15) of cases which they have observed a linear opacity occurred in all. They are unable to determine the line of pressure which causes rupture in any particular direction in the cornea. "In nearly every instance the progress of the corneal change is almost identical with that described in connection with the earlier cases, namely, (1) general haze, with indications of striping; (2) increase of the general opacity, sometimes to an absolutely impenetrable degree, and often obscuring the striping; (3) gradual diminution of the former, which is due to edema, and increasing visibility of the latter, which is due to the scar tissue. The ophthalmologist should remember that if he sees the case early the eye will probably look worse before it begins to mend, whereas if he sees it late it is probably on the mend so far as the general opacity is concerned." Regarding prognosis, evidence is accumulating that the persistence of these corneal scars, or at any rate of their effect on the vision, is very considerable. It is manifest that the opacities become indistinct in the course of years, but one that has become almost invisible may still give rise to much distortion of the corneal curvature and consequent astigmatism. They may be found to account for certain cases of high monocular astigmatism. A careful report is made of each case observed. Several eyes were obtained for pathologic investigation from babies born dead, and these findings show rupture of the posterior elastic lamina of the cornea. M.B.

BLASTING EYE LESIONS.—DONOVAN, JOHN A., Butte, Mont. (*Jour. A. M. A.*, Aug. 5, 1905), describes the method of using high explosives and gives the following causes of accident:

1. Careless handling of powder; it may drop or catch fire from candle or pipe; it may or may not explode. Thawing powder too near a fire; keeping it too near electric conductor terminals, etc.

2. Careless packing it with a jam into the hole.

3. Packing with a metal tamping rod instead of with wood, the iron in contact with the rock causing sparks.

4. Carelessness with the caps, which are highly explosive—cigar ashes, hot candle grease, or a little jar or concussion may explode the box.

5. Fuse cut too short or the short one lit first by mistake or an unusual delay in lighting one after some have been lit.

6. Error in counting blasts and man returning before last has exploded.

7. Missed hole—one in which fuse burned but powder did not explode, and the new men coming on shift unknowingly pick into it, causing an explosion.

8. Faulty or frozen powder—several pieces in a hole and some fail to explode, the pick later sets it off.

9. Caps left where children find and explode them accidentally or otherwise. This is the most frequent cause of children's injuries. It is probably with these cases that the oculist has most to deal.

He reports two cases and gives the following conclusions:

1. With but few exceptions, blasting injuries result from want of care on the part of the patient, his associates or his predecessors at work.

2. In careful hands and with those familiar with the dangers, these accidents should not occur.

3. The eyes should be examined immediately, the larger foreign bodies removed, conditions noted, atropin used, and subsidence of general reaction awaited.

4. When reaction subsides, remove particles as symptoms indicate, provided it is not practical to remove all at once.

5. Foreign bodies inside the eye would better be removed as soon as located.

6. In children, general anesthesia is safer if specks are deeply embedded.

7. Careful ophthalmoscopic examination of each eye should be made early and the prognosis should always be guarded.

8. Never operate simply to restore vision till every inflammatory sign has disappeared and all active changes have ceased; better wait even a few years. M. D. S.

Injuries from Bursting of Locomotive Water and Oil Gauges.—Conkey, C. D., Superior, Wis. (*Ophthalmic Record,* May, 1905.) The author finds a scarcity of literature pertaining to these injuries and reports four cases thus injured in hopes of calling attention not only to their frequency but to the necessity of the railroads affording engineers better protection against such accidents. He points out the fact that not only is the sight of the engineer endangered by these glasses being unprotected, but his usefulness on the engine may be suddenly terminated by such an accident and the lives of all the passengers on the train placed in jeopardy through his incapacity. He thinks that it would be well, while devoting so much time to improving signals and determining the fitness of the employe, to urge that the oil and water gauges be protected by wire netting being fitted closely over them.

M. B.

INSTRUMENTS AND METHODS OF EXAMINATION.

THE SACHS' LAMP FOR TRANSILLUMINATION OF THE EYE.—THOMPSON, EDGAR S., New York. (*Ophthalmic Record*, June, 1905.) This lamp consists of a 25 candle-power electric light, which is covered and bears a cone-shaped projector extending from the side of the light. This projector consists of a solid glass cone, silvered around the circumference, surrounded by a hard rubber shell which does not heat as the lamp is used. In using the lamp, absolute darkness is necessary. The point of the cone may be placed against the sclera previously cocainized, or against the upper or lower lid. Some little manipulation is necessary to get the proper illumination and the light must enter the eye at the proper angle. Important details in the ciliary region and the anterior part of the chorioid that would otherwise be inaccessible can be studied, and certain conditions that show poorly with the ophthalmoscope show clearly under transillumination. M. B.

A NEW STERILE DRESSING CASE FOR OCULISTS.—WICHERKIEWICZ, B. (*Post. Ok.*, 1905, No. 2.) It consists of a tin box (17.5 by 12 by 15 cm.) which can be placed into any steam sterilizer. A capsule at the inner surface of the lid contains paper for Wolffberg's paper dressing. The box is divided into four compartments. The first holds a reflector with handle, atropin salve, thigenol salve and xeroform salve, a solution of gum and a bottle of alcohol; the second, atropin, pilocarpin, glass rod, pair of forceps and boric acid solution; the third, roller bandages, gauze, 2 lenses (+115 and +20); the fourth, cotton and towels.

K. W. M., translated by C. Z.

A SHIELD FOR THE EYE IN SKIASCOPY.—RHOADS, J. N., Philadelphia. (*Ophthalmic Record*, July, 1905.) The author has constructed a shield or lip that can be attached to all shadow-test shades, whether they contain an iris diaphragm or not. It permits the operator to get close to the source of light, and allows him to move away to any distance without the light shining into his other eye. M. B.

BJERRUM'S METHOD OF TESTING THE FIELD OF VISION.—SINCLAIR, A. H. H., Ipswich. (Report of the May meeting of the Ophthalmological Society of the United Kingdom, *The Lancet*, May 13, 1905.) Sinclair points out the advantages of Bjerrum's method for testing the visual field in clinical work, especially in the diagnosis of glaucoma. A large screen of black velvet, marked with lines of black thread in a radiating and concentric manner in order to determine the extent of the field in any direction, was employed. The fixation point was in the center and the test objects of white ivory (1-20 mm. in diameter) were carried across the screen by means of a slender black rod, while the field of vision was mapped out by black pins and transferred to an ordinary perimeter chart. The advantage of the method was in obtaining a more discriminating chart of the center of the field involving relative defects of great clinical importance which were not demonstrable by the ordinary perimeter. Lantern slides selected from a number of charts illustrated glaucoma in which the areas of vision and relative defect were conterminous at the blind spot, this being in all cases partly encircled by a horn-like projection of the area of highest visual acuity. Optic atrophy, on the other hand, though showing an even greater limitation of vision, had not this peculiarity, which was a permanent one, as shown by cases of several years' standing. C. H. M.

ON THE VARIOUS METHODS EMPLOYED FOR LOCALIZING FOREIGN BODIES IN THE EYE BY MEANS OF THE ROENTGEN RAYS.—WEEKS, JOHN E., New York. (*Ophthalmic Record,* June, 1905.) The x-rays are given the position of prominence over all other methods for the localization of foreign bodies in the eye or orbit. The ophthalmoscope has a limited range of usefulness, the sideroscope next, and the giant magnet last. A table of substances is given for their relative transparency to the x-rays, from which a condensed table is here given:

Material.	Sp. gr.	Transparency.
Pinewood	0.56	2.21
Walnut	0.66	1.50
Paraffin	0.874	1.12
Bones	1.90	0.56
Glass	2.60	0.34
Tin	7.28	0.118
Zinc	7.20	0.116
Iron	7.87	0.101
Nickel	8.67	0.095
Brass	8.70	0.093
Gold	19.36	0.030
Platinum	22.07	0.020
Water	1.00	1.00

Of the various headrests, Dixon's is given the preference unless it be that of Hulen's, which is less cumbersome and less expensive. Weeks and Dixon have modified Sweet's chart. Their chart shows the eyeballs with their appendages, and it is ruled to the mm. scale. The different methods of localization are gone into elaborately. M. B.

ON AMETROPOMETRY AND ASTIGMOSCOPY.—MAJEWSKI, K. W. (*Post. Ok.*, 1905, No. 1.) In 1903, Le Mèhautè devised a method of ascertaining refraction based on Scheiner's experiment, which he called ametropometry. The apparatus consists essentially in a plate with two holes. An emmetropic eye sees through the two holes an illuminated rectangular fissure single. This appears double in ametropia, in myopia homonymous, in hypermetropia crossed. In order to better discriminate the character of the diplopia, each hole is covered by a glass of different color. If the eye is properly corrected, both images are fused in one. Le Mèhautè connected the plate with a refraction ophthalmoscope for rapidly changing the glasses before the eye. The author modified the instrument by placing before each hole of the plate a strong convex cylinder, by which a luminous point is drawn out into two separate long rays of different colors. Through a third hole in the center the luminous point is seen unchanged between both rays. If the ametropia is corrected, or in emmetropia, both colored lines are blended and pass through the center. This facilitates the determination of astigmatism. In turning the plate, the two colored rays are always vertical to the meridian whose refraction is being ascertianed. The illuminated fissure, which in the apparatus of Le Mèhautè must be turned simultaneously and equally with the plate, is here supplanted by a luminous point. The measurements of refraction obtained by this method yielded quite exact results compared with skiascopy.

The author describes another apparatus for finding, subjectively, the astigmatic axes. This so-called astigmoscope is a modification of the croix lumineuse, devised by Le Mèhautè, and is founded on the same principle as the well-known stellate figure of de Wecker.

K. W. M., translated by C. Z.

IRIS.

Secondary Tuberculosis of the Iris, with Spontaneous Rupture of the Lens Capsule.—Mayou (*Brit. Med. Jour.*, July 15, 1905), narrated a case in a boy, aged 3, who for some time previously had suffered from tuberculous dactylitis. The chief points of interest were the situation at which the tuberculous mass had invaded the cornea, the spontaneous rupture of the lens capsule, the nature of the exudation in the retina, and the general tendency towards cicatrization. P. H. F.

Oral Sepsis as a Cause of Iritis.—Campbell, E. K., London. (*Lancet*, July 22, 1905.) Syphilis and rheumatism have become assigned in ophthalmic literature as the more or less stereotyped causes of iritis, the former for the plastic, the latter for the serous. The ascription to syphilis is often a mere refuge for ignorance. "Rheumatism" is indefinite, loosely applied, and has no precise scientific meaning. Apart from rheumatic fever due to a specific microbe, and arthritis due to the gonococcus, the term is used vaguely to connote two special attributes, pain and relapse. Campbell has never seen or heard of a case of rheumatic fever associated with iritis. The latter is very rare in children, while rheumatic fever is common.

Campbell has seen three cases of iritis in which there was an absolutely negative history of either syphilis or rheumatism in any shape or form. In all there was marked evidence of oral sepsis; the alveolar margin along the whole line of teeth were red and inflamed; the gums bled easily; on pressure, small beads of pus welled up (pyorrhea alveolaris), and the breath had a sour smell. All had the dirty, sallow complexions suggestive of septic anemia.

The teeth were scaled, stopped or extracted, suppurating pockets were purified, and the mouth was rendered as pure as possible. This, combined with the use of mydriatics and tonics, cured all three cases rapidly. Although about 50 per cent. of cases of iritis are undoubtedly due to syphilis, yet even here we must consider the possibility of a mixed infection. P. H. F.

LACRIMAL APPARATUS.

FURUNCLE OF THE LACRIMAL CARUNCLE.—RICHTER, MAXIMILIAN. (From the Eye Clinic of Prof. E. Fuchs, Wien; *Beitr. zur Aug.*, Heft 63, p. 152.) The caruncle contains, according to some authors, sebaceous and Krause's glands, which produce mucus. Waldeyer, however, considers the latter as modified sudatory glands, and Sattler and Schwalbe found only sebaceous and sudatory glands, and those described as sudatory are accessory lacrimal glands of compound tubulous structure, one to four in number.

In Richter's case the caruncle was swelled to the size of a hazelnut and converted into a yellowish-gray necrotic mass. The semilunar fold was red, swelled and infiltrated, and also the lids red and edematous, mainly at the nasal half, the palpebral conjunctiva loosened and red and the ocular conjunctiva red and chemotic. A necrotic piece projected at the inner angle between the lids, which could not be opened. Under applications of Burow's solution, much pus was evacuated and the swelling subsided. The bacteriologic examination revealed staphylococci, streptococci and bacilli, resembling those of xerosis, but the cultures showed only streptococci. Whether the contusion of the eye, sustained three days previously, had any etiological bearing on this case was not necessary to assume, since the presence of lanugo hairs in the caruncle made an immigration of pyogenic cocci along them into the sebaceous glands very probable, in concordance with the studies of Schimmelbusch on the pathogenesis of furuncles. C. Z.

LENS.

A Case of Congenital Bilateral and Symmetrical Dislocation of the Crystalline Lenses.—Harman, N. Bishop, M.A., M.B. Contab., F.R.C.S. Eng. (*The Ophthalmoscope,* July, 1905.) This boy was seen when 14 years of age. Both lenses were found dislocated upward and nasally, with eyes divergent. One eye was amblyopic from non-use, but the other, with a +9.00 D. lens, had vision of 6/18, and with +13.00 D., J.2 at 4 inches.

M. B.

LIDS.

Varieties of Epitarsus.—Schapringer, A., New York. (*Centralblatt für Augenh.,* 1905, p. 129). In the majority of cases, epitarsus consists of a new formation on the lids similar to pterygium; it may, however, assume monstrous shapes or remain rudimentary. Schapringer attributes the etiology of epitarsus to tractions by amniotic bands, while Oeller considers it as a spontaneous formation. Schapringer observed three new cases (eight were published at a former time) of the rudimentary type, which are reported in detail. Two of these occurred in mother and daughter, the first instance of hereditary disposition to epitarsus. In one case the anomaly consisted in a short, hardly noticeable, curved line as the remnant of the nasal side of the epitarsus, and a minute granule at the inferior end, apparently a piece of cartilage. All other attributes of the epitarsus had disappeared. Such conditions might be confounded with cicatrices from trachoma. [According to Fuchs, *Lehrbuch der Augenheilk.,* 10th edition, the affection may be due to cicatrization after blenorrhea neonatorum.—Reviewer.]

MATERIA MEDICA AND THERAPEUTICS.

The Use of Benzoylvinyl-Diacetone-Alkamine (Beta-eucain) Lactate in Eye, Ear, Nose and Throat Work.—Ellis, H. Bert, Los Angeles (*California State Jour. of Med.,* May, 1905). gives the results of his experience with the use of the lactate of beta-eucain. For nose and throat work the author uses a 10 to 15 per cent. solution, and for eye work a ·2 to 5 per cent. solution. Ellis says, "a 5 per cent. solution dropped into the conjunctival sac causes a more decided smarting than does a 4 per cent. solution of cocain, but it causes neither hyperemia nor anemia, and it has the decided advantage of cocain in that it in no way disturbs vision, having neither cycloplegic nor mydriatic action, while the anesthetic effect is excellent and quite equal to that produced by a 4 or 5 per cent. solution of cocain, although you have to wait a little longer for the anesthesia, and it produces no lesion of the cornea." W. R. M.

Estovain in Ophthalmology.—Santos Fernandez, J., Havana. (*Gaceta Medica de Mexico,* March 1, 1905.) Santos Fernandez reports that during the past six months he has used estovain exclusively in preference to cocain in all ocular operations demanding anesthesia—especially in trachoma, strabismus and enucleation; injecting it into the orbital cavity.

The amount generally used was 10 centigrams, but 15 or 20 can be used with impunity. The results were highly satisfactory. From the experiments made he concludes that (a) estovain possesses, equally with cocain, the property of anesthetizing the eye and its accessories, rendering the eye and its accessories anesthetic for operating; (b) its use should be limited to subconjunctival and subcutaneous injections as in instillations it is not as effective as cocain; (c) on account of its vaso-dilating property it should always be preferred to cocain in injections, as the latter, a vasoconstrictor, even though used cautiously, may produce, according to various idiosyncrasies, certain præcordial anxiety and pallor of the face, against which one is nearly completely guarded if estovain is employed; (d) one can operate while the patient is sitting upright without fear of syncope. H. M. F.

Experimental Investigations on the Value of the So-called Crede's Drop.—Urata, Yada, Kumamoto, Japan (from the Eye Clinic of the University of Marburg; *Zeitschrift f. Aug.,* xiii, p. 242), investigated, in numerous experiments, the influence of various astringent and antiseptic eye waters on the contents of germs of the conjunctival sac of rabbits. The tear-points being sealed by cauterization, a certain quantity of one kind of bacteria was inoculated and a drop of the solution to be tested was instilled. After a certain time an "oese" of the contents of the conjunctival sac was taken out for culture and the latter counted with the apparatus of Wolffhuegel. The returns, representing the contents of germs of the conjunctival sac, were compared with those of the other eye, which had also been inoculated with the same quantity of the same kind of bacteria, without any or with instillation of a different kind of solution. The bacteria used were staphylococcus pyogenes aureus, streptococcus pyogenes longus, pneumococcus of

Fraenkel and gonococcus of Neisser. The solutions tested were 2 per cent. and 1 per cent. nitrate of silver, 1 per cent. acetate of silver, and ¼ per cent. sulphate of zinc. Two per cent. nitrate of silver influenced the bacteria most, ¼ per cent. sulphate of zinc least, especially staphylococci. The action of 2 per cent. nitrate of silver in comparison to the other solutions was less striking on streptococci, pneumococci and gonococci. The latter two are quite rapidly killed by ½ per cent. nitrate of silver. Since in blenorrhea neonatorum gonococci are frequently associated with staphylococci, a 1 per cent. solution of nitrate of silver is preferable, as it acts pretty energetically and rapidly on all kinds of bacteria and irritates the eye only slightly.

From her investigations, Urata recommends, for preventing infectious conjunctivitis, especially by gonococci, in the new-born, the following measures: Immediately after birth the skin of the lids and the surroundings of the eyes are carefully cleansed with boiled luke-warm water or 2 per cent. solution of boric acid or a disinfectant which does not irritate the skin, as oxycyate of mercury 1-1000, by means of cotton or soft linen, under simultaneous profuse irrigation with one of these solutions. After again cleansing the hands, 1 or 2 drops of a fresh 1 per cent. solution of nitrate of silver is instilled, and, by carefully pulling the lids several times apart, spread all over the conjunctival sac. C. Z.

THE TREATMENT OF TRACHOMA WITH CUPROCITROL (ARLT.).—**BOCK, EMIL.** Primarius, Laibach. (*Aerztliche Centralziefung,* Dec. 17, 1904.) Cuprocitrol is a salve which contains citrate of copper ($Cu_2\ C_6\ H_4\ .O_7\ 2\tfrac{1}{2}\ H_2O$). 5.00 or 10.00 and unguentum glycerini 100.00, devised by von Arlt. Bock reports his experiences with it in 58 cases. In 38, (65.2 per cent.) the results were good; in 11 (18.9 per cent.) it had no effect, and in 9 (15.4 per cent.) it was not tolerated. Cuprocitrol is a valuable addition to ophthalmic therapeutics. In recent cases it has the same effect as nitrate of silver or sulphate of copper. In advanced cases, with commencing cicatrization, especially with pannus, it excels all kinds of treatments so far in use. Its application is without pain, not irritating, does not produce an eschar and does not incapacitate the patient for work. It is harmless even in eyes which do not tolerate it on account of irritation. These properties and the form of application enable the patients to use it themselves and visit the physician only once a week for control. This is of paramount importance in remote regions, in which medical attendance is not possible. C. Z.

On the Action of Adrenalin on the Pupil and Intraocular Pressure.—Wessely, Carl, Berlin, (from the Physiological Institute in the University of Berlin; *Zeitschr. f. Aug.*, 1905, i, p. 310), gives in this admirable paper the results of his experiments with the various preparations of adrenalin which in the most simple manner explain the discrepancy of opinions with regard to the action of adrenalin. It is only a question of dosage. Only the quantity of adrenalin instilled into the conjunctival sac determines whether mydriasis and decrease of tension results or not.

In the first place Wessely tested the physiological action of the various preparations and the actual contents of adrenalin by ascertaining in numerous experiments on rabbits the concentration in which subconjunctival injections of 1 c.c. showed maximal action on the ciliary body. Subconjunctival injections of adrenalin act, as the author proved, also on the deep vessels of the eye, especially the ciliary body. Consequently smaller quantities of aqueous are produced and the intraocular pressure sinks. Wessely calls maximal action, if the vasoconstriction, caused by adrenalin thwarts the most intense irritation, which may befall the ciliary body, viz., the lowering of intraocular pressure by puncture of the anterior chamber: i. e., if the anterior chamber does not, as normally, refill rapidly by albuminous aqueous, flowing through the pupil, coagulating in a glass and (after simultaneous intravenous injection of fluorescin) containing abundant fluorescin, but slowly and imperfectly, and by aqueous humor secreted under normal conditions.

The contents of pure adrenalin of the various preparations were ascertained by colorimetric comparison of their combinations with iron, which by adding a drop of hydrate of pottassium assume a red color. They show, recorded in tabular form, great differences and they explain the contrasting statements. Instillations of 3 to 5 drops of a 1 per cent. solution of the crystalline substance, always produced in rabbits maximal mydriasis, diminution of secretion of aqueous (indicated by diminished excretion of fluorescin) and slight decrease of intraocular pressure. The same was observed in monkeys, but not in dogs and cats, which are less influenced by the drug. Subconjunctival injections, however, had in all these kinds of animals a vasoconstrictor action on the ciliary body and produced mydriasis by exciting the dilator. Therefore, it is not astonishing that instillations of the usual 1 per cent. solutions into the human conjunctival sac produce neither mydriasis nor lower the intraocular tension. Very likely they support the action of eserin, pilocarpin or cocain, but are of no avail in reducing glaucomatous tension. This could be only expected from subconjunctival injections, which, however, may not be without danger. Since adrenalin reduces only the secretion, whereas the increased tension is in the majority of cases due to impeded outflow, its application would seem rational only in cases complicated with iritis, in which the increased tension results from oversecretion. From his experiments, Wessely would consider 1 cm. of a solution 1:10000 in these cases as an appropriate dosis.

C. Z.

ON SOME UNUSUAL EFFECTS OF IODID OF POTASSIUM.—GIFFORD, H., Omaha. (*Annals of Ophthalmology,* April, 1905.) The author reports three cases of phlyctenular conjunctivitis that developed while the patients were taking the iodids, and could not be controlled until their administration was stopped. One case of abscess of the cornea developed at the site of an old corneal scar. It subsided upon stopping the iodid and recurred upon resuming it. One case of delirium in a 4-year-old child taking 25 drops of sat. sol. K. I. Two cases of iodic purpura of the skin of the leg. One case had nosebleed.

Reference is made to cases reported by others. Bouzitat (*Centralblatt fuer Augenheilkunde,* 1898) reports the case of a man who developed a severe purulent iritis while taking a moderate dose of iodid, which became controllable only when the iodid was stopped and recurred upon resuming it. Hallopeau's case. (*Ann. de Dermatol. et Syph.,* May 25, 1888). His patient developed a marked pemphigus. The eruption repeatedly recurred upon giving the iodid. The conjunctiva was congested, and a serpent ulcer finally developed. He also mentions a man who on taking iodid developed skin lesions with phlyctenular ulcers of the cornea. Bouzitat's case (*Recueil d'Oph.,* Oct., 1903.) His patient, aged 60, with double lacrimal stricture, while taking 60 grs. of K. I. a day developed corneal ulceration from which one eye was entirely lost and the other badly injured. Treatment was unavailing until the iodid was stopped. Kleineberger (Abst. in *Centralblatt f. Bacteriologie,* 39, p. 322), reports a death occurring after a patient had taken 3.5 grains of iodid. Gastritis developed, followed by peritonitis and death. Groenouw (Abst. in the *British Med. Jour.,* May 10, 1890), has collected nine cases of laryngeal edema from taking iodid in doses ranging from 3 to 200 grs. Foerth (*Wiener Klin. Woch.,* 45, 1901), reports cases of inflammation of the parotid and submaxillary glands from taking iodid. Blau (*Deutsche Med. Woch.*, V. B., p. 186, 1904), reports a syphilitic with O. M. S. C., who developed a painful inflammation of the auditory canal, with reddish brown, smeary exudate every time he took large doses of iodid. M. B.

The Treatment of Infection After Cataract Extraction.—Hansell, Howard F., Philadelphia. (*Annals of Ophthalmology,* April, 1905.) The percentage of wound infections given from statistics of different operators is from 1 per cent. to 4 per cent. The origin may be endogenous or ectogenous. The *preventive measures* are dealt with under the heads of "Exclusion of Conjunctival and Lacrimal Diseases," "Exclusion of Sources of Endogenous Infection," and "Preparation for Operation." Nothing especially new is advanced. Under "Signs of Infection" comment is made upon the importance if differentiating between the spongy iritis of Knapp and actual infection of the wound. In iritis the upper section of the cornea becomes hazy, the anterior chamber shallow, the iris swollen and hyperemic and the anterior chamber is partly filled with a dark mass of spongy exudation. Infection appears as a white point in the line of incision, rapidly spreading until the whole cut is a dense white line, sharply outlined against the comparatively clear cornea. The anterior chamber is at first clear and later occupied by a dull white mass suspended in its upper section, or protruding through the pupil.

Treatment.—The local therapeutics are of three kinds: Cauterization of the wound, subconjunctival injections and germicides inserted or injected into the anterior chamber. The means of cauterization comprise the galvano-cautery, sterilization and cauterization by silver nitrate, mercuric bichlorid, carbolic acid and the thermo-cautery. With carbolic acid the author has had two cases which have proven its efficacy. He has had no experience with subconjunctival injections, the remedy has not recommended itself to him. With regard to iodoform rods introduced into the anterior chamber, he says, "the rods are undoubtedly valuable, occasionally saving some vision, often saving the ball, and if, as Ostwalt and Shumway suggest, this treatment was combined with electric cauterization, the results might be still better." The author feels very kindly toward injections of bichlorid into the anterior chamber, since he saved one case by this procedure.

M. B.

Diaphoresis in the Treatment of Eye Diseases.—Hansell, Howard F., Philadelphia. (*Therapeutic Gazette,* May, 1905.) His method of producing diaphoresis is by the use of the tub bath. The water is at a temperature of 106 to 110 F., and the patient remains in the tub from 10 to 12 minutes, and is then wrapped in flannels and placed in bed between blankets protected by rubber sheets. The sweating is carried out for one to two hours. If too much depression occurs stimulants are to be used. If sweating does not come on promptly, a glass of iced water is given, which usually starts it. Hot water bottles placed in the bed with the patient will also assist. The baths may be given daily and continued for several weeks. His results have been exceptionally good in all acute inflammatory diseases of the eye, especially diseases of the uveal tract, the notable exceptions being chronic disease of the uveal tract due to syphilis. Three illustrative cases are reported, one of acute retinochorioiditis, one of chronic uveitis of many months' duration, and one of acute chorioiditis. In these cases the improvement in vision and in the vitreous haze was very striking. He finds the above treatment is augmented by administering iodid of potassium internally and mercury by inunction. M. B.

Note on the Action of Antipyrin in Optic Atrophy.—Valude, Paris. (*Annales d'Oculistique,* March, 1905.) Valude has frequently used injections of antipyrin in cases of optic atrophy and considers them a valuable remedy, but limited in their application to the descending atrophy which is consecutive to acute infectious cerebral affections. The solution which he employs is composed of distilled water 50 gms., antypyrin 25 gms., cocain 0.25 gms., of which combination he injects 2 cubic cm. under the skin of the lumbar region daily. If there is no result after the employment of 25 injections, he says that it is useless to continue this form of treatment. If the vision improves, the series of 20 or 25 injections are repeated at intervals. G. C. H.

Baths of Superheated Dry Air in Ophthalmology.—Ostwalt. (*Annales d'Oculistique,* March, 1905.) The curative effect of hot dry air, particularly in chronic inflammation of rheumatic and gouty origin, Ostwalt says, is generally recognized, but he believes that all depends upon the manner in which it is administered. He says that the eyes will be much more benefitted by real baths of hot air than by the simple applications of heat, such as are usually made. Two scarcely practical methods of applying hot dry air to the eyes have been tried. The applications of radiating heat by means of lamps with reflectors, and the projection of jets of hot air upon the eyes; both very imperfect substitutes for baths of superheated dry air. The apparatus contrived by the author consists of a cylinder containing a coiled tube for the air to pass through and a Bunsen burner to heat it. This is connected with a receptacle of proper form to be applied to the eye by a metallic tube. It is covered with asbestos and felt, and is supplied with a thermometer. It is held in position by a spring band passing over the head. Air is forced through the heated coil by means of a rubber bulb and is applied to the open eye, which, on account of the evaporation of tears, will bear a much higher temperature than the skin. The heat is gradually increased to the highest degree that the patient can bear without pain. One or two applications a day are made and the duration of each is about 30 minutes. G. C. H.

NEW CONQUESTS OF OCULAR THERAPEUTICS.—DARIER A., Paris. (*he Ophthalmoscope,* June, 1905.) *Analgesic Action of Radium and of the Radio-Active Substances.* "Starting with the idea that Bacquerel's rays, like the x-rays, had a powerful action upon the neo-cells, and the imperfectly organized tissues, it occurred to me to endeavor to resolve, to melt, and to resorb a *traumatic intraocular hemorrhage,* by applications of radio-active substances to the eyeball and the temple. A packet containing 1 gm. of radium salt of 240 U., simply wrapped in thin paper, was applied to the eye; another packet was applied to the external lateral portion of the orbit, the whole being kept in position for 24 hours by a gauze bandage. This hemorrhage was not due to an affection of the vessels, but to an injury sustained by the eye, which for a month had resisted our therapeutic efforts. Sight rapidly improved with the first application of radium, the blood was resorbed, and the fear of exposure to light, as well as the pain which the patient had suffered in the eye, disappeared; but in the first instance I did not attach much importance to the disappearance of the painful element, all my attention being directed to the clarification of the vision, which I was inclined to attribute to the resolvent action of Becquerel's rays upon the extravasated blood."

In a second case of diffuse hemorrhage of the vitreous body, which had made its appearance without any appreciable cause, and which had entailed a complete loss of the eyesight, he first prescribed the classic treatment, in particular iodid of sodium, for two months unsuccessfully. He made applications of radium at 240 U. a week. The immediate result being *nil,* the iodid of sodium was again resorted to, and in the course of a few days the sight was considerably improved, and in one month the sight had returned to almost normal.

In a third case the hemorrhage remained purely retinal in character. This was in a lady who for years had been a sufferer from epileptic attacks, sometimes violent, sometimes slight. After several months' treatment, the retinal hemorrhages remaining unchanged, radium was used as above; two packets of 1 gm. each at 240 U. during 24 hours each day, and during 3 hours applications of a tube at 7,000 U. A fortnight's course of this treatment made no difference to the eye, but the patient was relieved of her epileptic attacks, which had regularly occurred three or four times a week. No recurrence after 18 months. The attacks first began after a nervous shock. M. B.

New Conquests of Ocular Therapeutics.—Darier, A., Paris, France. (*The Ophthalmoscope,* July, 1905.) *Analgesic Action of Radium and the Radio-Active Substances.* It was by mere chance that Darier discovered the analgesic properties of radium. He used it in a case of rheumatic iritis, with inflammatory exudations in the pupil and anterior chamber, in hopes of promoting resorption of the exudations. The results were *nil* in this particular, but most surprising were the effects upon the very acute pain which the patient suffered in the eye and over the whole of one side of the head. Scarcely had an hour passed after the application of a 1 gm. packet of radium salt, 240 U., upon the eye and eyelid, when the patient felt a dullness in the painful region and the pain soon disappeared entirely. The pain returned on the third day, and was again relieved by the radium. At about this same time Darier had a patient suffering from specific chorioiditis, accompanied by orbital neuralgia in which the application of a packet of radium salt, 240 U., proved equally efficacious in relieving the pain. Since then he has had occasion to repeat the treatment many times in the cases of patients suffering from pains in the eyes from various causes. With some the pain disappeared forever after one application; with others the pain returned and was again relieved for a longer or shorter period. He reports relief from pain in cases of injuries to the eye, in violent attacks of headache, in pains in the head as a result of electrical discharges caused by short circuits. Darier once had an attack of ophthalmic migraine with scintillating scotoma, the painful spot being situated between the ear and the orbit. He applied to it the most powerful radium which he had (Br. Ra. 500,000 U.). It relieved all the symptoms in 2 minutes. He reports in detail the case of a confrère who was suffering from ocular rheumatism. All the usual remedies had failed to give relief. The sclerotic became more infiltrated and the pain more intense and the cornea began to lose its transparency. Finally a tube of 0.10 gm. of radium bromid of 7,000 U., was bound on the external edge of the orbit, the pain was relieved in an hour's time. A packet of radium at 240 U. was left with the patient to apply himself every evening. In the course of a few days the pain had entirely disappeared. While the episcleritis remained it was no longer painful and the disease gradually disappeared. He believes that the milder applications of radium are more beneficial in facial neuralgia than the stronger applications. M. B.

Radium and the Eye.—Bock, Emil, Primarius, Laibach. (*Allgemein Wiener Med. Zeitung,* 1905, Nos. 9 to 11.) Bock gives an excellent review of the physical and chemical properties of radium and its actions on the eye. The latter consist in tissue changes and light perception. The changes are inflammation of the conjunctiva, cornea and iris, lids with falling out of lashes and ulceration. These alterations partly disappear after several days or weeks, partly the corneal opacities remain; in other cases central retinitis persists for months and atrophy of the optic nerve develops. They are due to necrosis of the epithelia and endothelia of the anterior segment of the globe. Radium acts on the nervous cells of the retina like a poison and produces vacuoles in the gangloin cells with shrinkage of the nuclei and disintegration of the cells. The visual purple is not bleached. The lens absorbs a portion of the radium rays, but transmits most of them, since the same changes of the retina are observed whether the lens is present or not. Therefore in experiments with radium the eyeball must be carefully protected. Radium held before the eye produces fluorescence in lens and vitreous, which then become the luminous sources perceived by the retina. The same occurs when radium is placed on the cranial bones. There is, however, no perception of light in blindness from atrophy of the optic nerve or after removal of the eyeball. A cicatrized opaque cornea is no impediment to the luminous action of the radium rays, if the retina is normal. The visual perception of radium is nothing but fluorescence. Radium is not able to raise the visual acuity of an amblyopic eye or to restore sight to a blind eye. C. Z.

The Treatment of Inoperable Cases of Malignant Disease of the Orbit by the X-ray.—Bull, Charles Stedman, New York. (*New York Medical Record,* June 24, 1905.) The writer has carefully studied the reports of cases of malignant disease treated by the x-ray, but has not been very favorably impressed, partly owing, however, to lack of detail in the histories of many of these cases. Some read like fairy tales, so successful were they. Many of the reports have not contained any account of the exact method employed, the number of sittings, or of the time of exposure, and many of the reports contain only a few important facts and many hypotheses. The writer speaks of the hysterical enthusiasm with which new agents are grasped and of the extravagant claims made of their value. This leads very naturally to a minute criticism of the results reported. It seems, however to be an established fact that the x-rays do sometimes exert a marked effect on carcinomatous growths of a superficial character.

All admit that every malignant growth of the orbit which has not apparently involved the adjacent sinuses, should be extirpated by the knife as soon as possible. But it is the concensus of opinion now that when the neighboring sinuses are involved a complete removal of the growth is impossible, a recurrence certain and that with each operation the recurrence is hastened and the patient's life shortened. In view of what is known about the action of x-rays, it seems wise and a duty after such operation with the knife as seems necessary, to expose the parts a certain number of times to the x-ray in order to destroy, if possible, cells or aggregations of cells in the neighboring parts which can not be reached by the knife. Good authority has stated that the death rate has been in this way diminished. There seems to be no doubt that sarcoma does not yield to the influence of x-rays as readily as epithelioma and carcinoma. Many cases have been reported as benefited, but few have been completely cured. The tumors have shrunken but have not entirely disappeared and the general condition of the patient has not improved. The writer has seen it stated that metastasis was more common in cases treated by x-rays than in those treated by the knife. Based on his own experience, the writer is satisfied that the pain so constantly complained of is speedily, sometimes immediately, removed by the x-rays, and if this is repeated a number of times it does not return. In inoperable cases, therefore, the x-ray treatment is to be advised because it relieves suffering and may prolong life. The more recent and superficial the growth is the more rapid and favorable are the results. Time is needed to prove these results. The writer has not observed any of the dangers or evil effects of the rays which have been reported in any of his own cases, such as infiltration and opacity of the cornea, optic neuritis, conjunctivitis and cellulitis of the eyelids. Several authors, too, have reported subcutaneous extravasations of blood, and Ehrmann has described a telangiactasis as a late result of exposure to the x-rays.

Detailed reports of ten private cases are given, in all of which there had been a previous excision of the growth with the knife. Of these two were very much improved, if not apparently cured, and of these one was an epithelioma and the other a carcinoma. The other eight cases seemed unaffected by the treatment—they were sarcomata. In the two favorable cases, showing entire disappearance of the growth, the writer did not observe any evidence of the marked cachexia so frequently reported in cases of malignant disease treated by this method. He concludes that there is but little doubt that x-rays act favorably on superficial carcinoma, and that the efficiency of the rays grows less rapidly with the depth from the surface. Further experience is needed to make our knowledge more accurate. A full and interesting account is then given of the ten cases and the details of the treatment. The reader is referred to the original article for these details.

E. E. J.

Cases of Corneal Ulcer with Hypopyon Treated by Serum Therapy.—Oliveres. (*La Clinique Ophtalmologique,* June 25, 1905.) It has been found by Uhthoff and Axenfeld that hypopyon ulcer is nearly always caused by the pneumococcus of Fraenkel, and this induced Roemer to employ the antipneumococcic serum in the treatment of ulcus serpens; and, since Roemer's work in this direction, it may be said that the serum treatment of serpiginous ulcer of the cornea is indicated as a prophylactic. Roemer, in 1903, at the Ophthalmological Society of Heidelberg, reported 68 cases treated in this way. Of these 20 were in the stage of infiltration, and they were cured, with good vision resulting. Forty-eight of the cases were in an advanced period; of these 38, nearly 80 per cent., were also cured. The antitoxic serum used and suggested by Roemer is prepared by Merck of Darmstadt.

For prophylaxis in small wounds of the cornea, Roemer injected 10 c.c. of this serum under the skin of the flank; and the eye covered with an occlusive bandage. When the wound is already infiltrated, an injection of 10 c.c. is made and repeated daily as long as needed. Darier and some others would augment the dose each day so as to avoid tolerance. Nedden treated 14 cases with the serum and only obtained a cure in 2 of them. Caldero employed, subconjunctivally, a serum prepared by Tizzoni, and of 35 cases had 8 cures; the other 28 cases were severe and recourse was had later to galvano-cautery. Oliveres had 3 cases which he treated with the Roemer serum. The first was in a man 68 years of age. Three days previous to Oliveres seeing him the man had received a foreign body in the left eye, the traces of which Oliveres discovered. There was a central corneal ulcer 1 mm. in diameter, with infiltration surrounding it, and a small hypopyon. After washing conjunctiva with 1/2,000 cyanid of mercury, a dressing of xeroform was applied, and an injection of Roemer's serum given in left flank. The following day ulcer had increased to 3 mm. and the hypopyon to 1 mm. in height. The ulcer was touched with the galvano-cautery and 20 c.c. of the serum injected. Bacteriologic examination demonstrated the presence of the pneumococcus. The conditions later induced Oliveres to abandon the serum treatment, and a subconjunctival injection of cyanid of mercury, 1/2,000, was given, and this arrested the progress of the infection—the ulcer having increased in spite of the serum treatment. After four of the subconjunctival cyanid injections cure was had. Oliveres had 2 other cases in which the serum treatment gave a negative result. He believes that the serum may, with other measures, perhaps be useful. B. E. F.

INUNCTIONS OF COLLARGOL IN PANOPHTHALMITIS.—BAUDOIN, (*La Clinique Ophtalmologique,* July 25, 1905.) In the March 10, 1903, number of *La Clinique Ophtalmologique,* Trousseau reported 3 cases of iridochorioiditis with hypopyon, chemosis and mucopurulent secretion, all the symptoms of an infectious process of endogenous origin certainly in 1 of the cases, but of which the 2 others might be in dispute on account of the existence of anterior ocular lesions. After the treatment with collargol pomade-frictions for several days the infectious process ceased and disappeared, so that Trousseau was struck with the truly marvellous result of this medication; and it occurred to Baudoin to try it in post-operative panophthalmitis, which was the condition in the case he reports, as follows: Laborer consulted Baudoin in 1904, with a double dacriocystitis complicated by chronic conjunctivitis and increased lacrimation. In the right eye there was a central adherent leucoma which resulted from a serpiginous ulcer. After some weeks of treatment, which included passing of probes, the patient desired an optical iridectomy, which Baudoin reluctantly did, fearing infection, however, which occurred promptly after the operation. Pus was found on dressing, the lids were swollen and edematous, the cornea whitish and infiltrated so that it was impossible to distinguish the color of the iris or the new pupil. The lips of the incision presented a whitish line; in fact, it was recognized that panophthalmitis was commencing. Knowing the uselessness of local applications, that subconjunctival injections were painful, Baudoin determined to try the frictions of collargol with which Trousseau had been experimenting. After cleansing and scraping the skin in the region under the arm, Baudoin applied to it, with friction for eight minutes, a pomade of collargol (20 per cent.) and applied a bandage. The next morning patient said there was less suffering and that he had slept somewhat. After removing the dressing, which consisted of a compress holding a solution of 5 per cent. hermophenyl and instillation of methyl blue, it was discovered that there had been a complete change in the clinical picture, there was less swelling of the lids by two-thirds, the cornea had cleared so that the iris could be seen, and pupil also, except the portion contiguous to the corneal section. This result was most striking and the treatment was continued. Progress in the cure went on and in five days the edema of lids had disappeared, the muco-purulent secretion was insignificant, the whole cornea was clear and the iris and form of pupil could be made out—in fact, there was the satisfaction of relief from the terrible condition. Baudoin reports a second case of threatened panophthalmitis which followed a slight trauma; the collargol treatment also resulted in a cure. B. E. F.

COMBINED INTRAVENOUS AND SUBCONJUNCTIVAL INJECTIONS.—GUIBERT. (*La Clinique Ophtalmologique,* July 25, 1905.) The employment of subconjunctival injections has been very promptly accepted by oculists, but intravenous injections seem to be adopted less readily, Guibert thinks. The latter method of treatment is more difficult of application, but perhaps more effective. As against intramuscular injections, we have pain and nodosities, while with intravenous injections we possess a very rapid and great result. Having seen at Darier's clinic three injections made so readily, Guibert determined to substitute them for the intramuscular. The result, Guibert claims, is surprising. He relates several cases in which he has tried the method. The first case was in a box 16 years of age who had keratitis of the hereditary type. He was treated with the usual remedies, which included also intramuscular injections. The vascularization period had disappeared, but the cornea remained for a long time infiltrated. Injection of 1 centigram of cyanid of mercury was made and eight days later the cornea had become almost clear. With a second intravenous injection complete clearing of the cornea followed. Progress from this method had produced much more marked effect in fifteen days than the other treatment had in two months. In another case, one of double macular chorioiditis, improvement came quickly. The other cases were 1 of central scotoma, 1 of serous iritis, 1 commencing tabes, 1 myopic chorioiditis with vitreous opacities, 1 of iridochoriodītis. The result of this method of treatment in them, Guibert claims, was very extraordinary.

B. E. F.

THE TREATMENT OF SUPERFICIAL EPITHELIOMA BY RADIUM. REPORT OF CASES.—DARIER. (*La Clinique Ophtalmologique*, July 25, 1905.) The case was a woman 52 years of age; she insisted that there had been no hereditary neoplasms of any kind. In 1897 a small button appeared in the ala of her nose, which a surgeon in 1899 removed with a bistoury. The tumor had grown to alarming proportions and invaded the internal angle of eyelids. In February, 1904, Darier first saw the patient, and she then presented a typical case of superficial serpiginous epithelioma with peripheric nodosities, without ulcerative surface but with cicatricial crusts. The lesion extended from the wing of nose to the internal angle of eyelids and involved the lower lid. Darier applied the galvano-cautery to the nodosities and in the depressions applied chromic acid and powdered methyl blue. In four or five months all the involved surface was cicatrized and the patient returned home. In May, 1905, she returned with a new and large invasion of the upper lid, in which there existed a prominent trilobed tumor of the size of three peas. This neoplasm seemed to be very malignant, invading, as it was, the caruncle and lacrimal sac. The patient, opposing all operative measures, returned to Darier to try radium, though without much confidence. Application was made of 5 mm. of radium sulphate (500,000 U.) to each of the lobes of the tumor, radium having been held with enamel varnish upon a copper plate 25 mm. square. A second application was made three days later. After eight or ten days the tumor had melted away and there remained nothing more than a red surface slightly eroded at two points. Radium applications were continued every eight days upon the cicatrized surface. In a month cure was had. At the level of the tumor of the upper lid and inner canthus there was a slight depression caused by the disappearance of a portion of the tarsal cartilage; the skin still red with a small xanthelasma. That which struck Darier most prominently as a result of the radium treatment was the rapid melting away of the neoplasm (eight or ten days) and its complete disappearance without cicatricial tissue, and with only the loss of a portion of the tarsal cartilage and some of the eyelashes. It seemed that the destruction which Darier feared was held exclusively to the epitheliomatous cells, and that the normal cells were stimulated in their development—repairing quickly the lost substance produced by the morbid process. Darier has employed the *x*-rays, but now pronounces strongly in favor of radium, which is infinitely more manageable and less dangerous. The first application of radium Darier witnessed was made by Dr. Mackenzie Davidson, July, 1903, at the Royal London Ophthalmic Hospital, for a case of epithelioma of the eyelids. Some few cases have since been reported. Darier first applied the radium bromid in the strength of 20,000 U., and in that strength the analgesic effect is remarkable. Darier quotes 3 cases of Sir Reeve Manby, which were cured by radium. Darier describes the mode of application of radium and states that a thorough knowledge of the physical properties and biologic effects are essential—he having studied them with Currie, Becquerel and Danysz, and published their work in *La Clin. Ophth.* in 1903-4.

Since the action of radium is now better understood than it was at first, it is now employed of higher intensities than formerly. The bromid salt is used, which is said to be pure, but this purity is very relative and difficult of verification by the practitioner, it only being possible to measure it by the electroscope. The most certain method of determining as to the activity of the product is to apply it in the proper envelope to the skin of the forearm for five, ten, fifteen or twenty minutes and watch for the characteristic reddening effect, and be governed by the time required to produce the red spots, which later follow in eight, fifteen or twenty days, according to the greater or less activity of the radium salt. When it is very pure it is to be separated from the skin by a simple envelope, the burning effect then appearing at once after the application. In a glass tube the loss of radiating power may be 90 per cent. of its total power, according to the thickness of the glass. Mica and celluloid or caoutchouc absorb much less, but these latter are soon altered. M. Currie has tried to find an insoluble salt of radium which he applies in an enamel upon metals, and which will stand a temperature of 500 degrees without change. Darier, in conclusion, states that the radio-activity is capable of rendering great service. The results in the treatment of pulmonary tuberculosis by it are exceedingly interesting. Rehns was able to cure rebellious dermatoses by this agent, using the salts of radium in pomades. B. E. F.

MUSCLES.

THE PRACTICAL APPLICATION AND THE RELATIVE VALUE OF THE TESTS USED IN EXAMINING THE EYE MUSCLES.—DUANE. ALEXANDER, New York City. (*Annals of Ophthalmology*, April, 1905.) The test objects employed must be sharply defined, well separated from their surroundings, and just large enough to be distinctly visible. Vertical or horizontal lines should be eliminated from the test object. The tests are static tests and dynamic tests, the former determine the position of the eyes when at rest, the latter the ability of the eyes to move. The screen test is made by placing the patient with head straight and with eyes in the primary position, and directed straight at the test object. A card is then passed from one eye to the other and it is noted if either eye moves when covered or jumps back into place when uncovered. If movement is detected prisms are placed before the eye until the eye jumps in the opposite direction. Then, by deducting two from the prism used a close measurement is obtained of the amount of deviation. If there is no screen deviation to start with we can safely assume that there is no heterophoria greater than one or two degrees. To differentiate between squint and heterophoria, the screen test is used as follows, with both eyes open and directed toward the test object; one eye is covered, say the right eye, and then suddenly uncovered. If that eye moves when covered and moves back when uncovered, the other eye remaining in position without movement, it is a case of heterophoria. If under the same conditions, neither eye moves (and yet alternate covering has shown that there is well-marked deviation) the right eye is squinting. If both eyes move the left eye is squinting. By repeating the tests several times, first with one eye and then with the other, the author can tell in a case of squint if it is of the alternating variety. The parallax test is conducted simultaneously with the screen test by asking the patient to tell how the object looked at moves, as the screen is transferred from eye to eye. The recognition of this parallactic movement is really a recognition of diplopia; only, instead of the double images being seen simultaneously, they are seen in succession. Sometimes a double jump is noted, the primary jump and the jump in the opposite direction, or movement of redress. The parallactic movement may be measured with prisms at the same time that the screen-deviation is measured. In one respect the parallax test is very valuable, because affording better than any other subjective test a comparison between the relation of the eyes as regards binocular vision, on the one hand, and their relations as regards binocular fixation on the other. This is true because the two tests are made together with the conditions the same. For example, if there is a discrepancy between the screen test and the parallax test, the in-and-out jump being corrected by a prism of 12, while the parallactic movement is corrected by a prism of 4, we can be sure there is a real retinal incongruity of this amount. This could not with certainty be predicted if the same difference had been found with the screen test and the phorometer; for these two tests are made at different times and under somewhat different conditions, the position of the eyes might have changed in the interval, and the discrepancy be only apparent. Another advantage of the screen and parallax tests is that it enables us to measure the amount of vertical and lateral deviation simultaneously.

The author has added a graduated arc to the Black-Worth amblyoscope, thus enabling it to be used as a phorometer. Stevens' phorometer tends to show an excess of exophoria, and the Maddox rod an excess of esophoria. With some few the latter test fails altogether because of the strong tendency that they show to bring the line of light into the image of the flame. He thinks very little of the clinical value of declination, except occasionally in complicated cases of paralysis. Otherwise the disturbances of declination seem to be rare and when they do occur are to be regarded as simply pathologic curiosities. They are productive of symptoms only to a very insignificant degree.

Dynamic Tests.—Tests for monocular movements are made with the tropometer or perimeter. He places but little reliance upon this test. He thinks it may be of service in differentiating some of those obscure cases in which we can not certainly tell if we are dealing with a paresis of a muscle in one eye or a spasm of the associate muscle in the other. *Tests of binocular movement* are made by covering the patient's eye with a red glass and then determining the field of binocular fixation and field of binocular single vision. An electric light or candle is held three feet in front and then moved in all the cardinal positions of the gaze. If diplopia is shown in any portion of the field, its amount and kind are recorded upon a chart that he illustrates in the text. His method of recording is gone into at some length.

Tests of converging power are made by first determining the imbalance at far and near and then by the near point convergence for a vertical line in the center of a circle on a white card. This last procedure the author considers of especial value even in cases of divergent squint, since it enables us to judge if the patient makes any attempt at all to converge, and if so to what extent. Prism convergence (adduction) he considers of subordinate importance. He does not believe anything is to be gained by estimating the relation between prism convergence and prism divergence, or that there is any normal relation between them. In making tests of *diverging power* he determines the relation between imbalance at near points, when the eyes are not diverging, and the amount for distance, when they are. The latter is of value, and will show subnormal (3) and excessive (9) degrees of divergence. Tests of *supravergence* afford but little information and can usually be dispensed with. The tests must begin with those that involve the least strain of the eye muscles, hence tests for imbalance must be made before tests for movement, and the tests for distance before those for near. The fields for binocular single vision and the field of binocular monocular fixation tests are taken last of all. Not all tests are needed, except in complicated cases. M. B.

FACTS VERSUS FANCIES CONCERNING HETEROPHORIA.—HOTZ, F. C., Chicago. (*Annals of Ophthalmology,* April, 1905.) The author believes that the oculists of this country generally recognize that refractive errors play an important rôle in the etiology of headaches and functional neuroses, but that they do not, except as a minority believe this to be true of heterophoria. He admits that some eyes have been damaged or not improved as a result of tenotomies, or operations upon the eye muscles, but he does not think that these failures should argue against any and all treatment of heterophoria. In support of this contention he reports five cases operated upon for heterophoria after correction of their errors of refraction had failed to give relief. These patients were all completely or partially relieved first by prisms worn constantly, and finally given permanent relief by appropriate operations. He thinks these cases serve to show the importance of correcting heterophoria as well as would the report of a greater number. A method he uses of positively determining if heterophoria is the active cause of the symptoms complained of, is worth mentioning. If a patient complains of headache or asthenopia from reading, he is required to read for some time with one eye, the other being closed, and the following evening do the same with the other eye. If this experiment does not cause the symptoms complained of, it is in evidence that the refraction is not the cause, but that an heterophoria is. M. B.

THE CORRECTION OF EXOPHORIA BY DEVELOPMENT OF THE INTERNI.—ROBERTS, W. H., Pasadena (*Jour. A. M. A.*, Aug. 12, 1905), calls attention to the importance of determining the muscle balance in every case of ametropia. A slight exophoria is usually associated with hypermetropia, and one or two degrees need not be corrected, as they will enable the eyes to be used for near with greater comfort. When exophoria is present the amount of the plus sphere must be very considerably reduced, or omitted, as slight amounts of uncorrected hypermetropia act as an incentive to convergence. Slight degrees of exophoria in strong, robust patients may not produce symptoms of eye strain, especially not in myopia. The latter should, however, be fully corrected. A note of warning is sounded against indiscriminate performance of the various tenotomies, with or without advancement. Lack of balance can be cured or relieved in many instances by home exercises, with supervision and additional muscle training at the offices. This consists in overcoming weak prisms by convergence fusion at 20 feet to the limit, when diplopia ensues. The work of convergence is then transferred to the near point, and the strength of the prism is increased. In this way abducting prisms up to 50 degrees may be overcome by exercise. It is essential to stop short of actual muscular fatigue. P. H. F.

RECURRENT PARALYSIS OF OCULAR MUSCLES ASSOCIATED WITH PAIN.—STIRLING, A. W., Atlanta (*Archives of Ophthalmology*, July, 1905), reports a case of recurrent ocular paralysis, accompanied by pain, in a man aged 28. There was paralysis of all the left external ocular muscles, with the exception of the external rectus, together with ptosis and a dilated pupil and paralysis of accommodation.

There was an interval of seven years between the first and second attacks of pain, after the second attack the interval was from 14 to 30 days. The patient has had four attacks of paralysis. The pupil has never become normal in size and action since the first attack, and since the second the ciliary muscle has been more or less paralyzed. The patient's family and personal histories were negative; the patient's only trouble was a tendency to constipation and dyspepsia.

The author considers a toxemia to be the most probable cause in this case. W. R. M.

The Direct Action of Drugs upon the Extrinsic Muscles of the Eyeball.—Preliminary Notes upon a Few of the Findings Obtained.—Oliver, Chas A., and Holt, Daniel M., Philadelphia (*Annales of Ophthalmology,* January, 1905). This work was begun three years ago. The experiments were made upon frogs, guinea-pigs, rabbits and dogs. Apparatus, both improvised and of skilled workmanship, were employed; drugs of the most certain kind, in amounts of known value, were used; and tests were made in all manner of different ways, while competent men, who watched every step of the procedures, did the work.

The first general condition of indisputable definiteness obtained was that there is an idiocratic response of the extrinsic muscles of the eyeball to the direct action of certain drug materials in the mammalian forms of animal life; the second was that this action not only is in direct relationship with the amount and the strength of the drug employed, but that it is in definite proportion to the character and the condition of the muscle itself. An interesting special finding was that certain metallic salts of high specific gravity and simple forms of crystallization gave the most rapid and the best results, results which were probably dependent upon increased solvency and better osmosis. M. B.

MYOPIA.

Removal of the Lens in Myopia.—Barnes, Justin L., New York. (*New York Medical Record,* June 17, 1905.) The removal of the lens in high degrees of myopia is now a well-established feature in ophthalmic surgery. A case of double removal is reported. The right eye was first operated on. There was post. staphyloma and some choroiditis but no serious contraindicating fundus lesions. Linear extraction was done, a procedure which the author states he would not do at the present time. The original vision and refraction were O. D. V.=5/200; with —20 D. —1 cyl. 15 V.=20/70. After the operation with —2 D. —1 cyl. 35 V.=20/30. A few months later the left eye was operated on and with this result: O. S. with —1 cyl. 180 V.=20/30, the former record being V.=6/200, with —22 D. —1 cyl. 165 V.=20/70. A year after the last operation the vision remained 20/30.

Barnes then takes up the subject of removal of the lens for high myopia in detail under separate headings. History: The writer gives Fukala the chief credit of the operation for the neutralization of myopia *per se,* and with success, and for bringing the operation into perfection of detail. It was probably first proposed by Desmonceaux, an abbe, who in 1776 suggested it to

Wenzel. The intervening history is given. Rationale: As is well understood, the reason for removing the lens lies in the fact that the need of the great strength of the myopic correcting lens is immensely reduced by the removal of the crystalline. This reduction amounts to a sum total of from 14 to about 22 diopters, some claiming even more. If, by the removal of this high degree of refractive error, the vision is greatly improved, the necessity for wearing heavy and powerful lenses is avoided, and the patient better fitted for his occupation, it can not be denied that the rationale of this procedure is evident. Selection: According to Vacher, "progressive myopia beginning at the age of 12 should be operated if the myopic diopters surpass the number of years of the patient." In the selection of suitable cases, the degree of the myopia and the age of the patient play the important rôle. Within reasonable limits, provided the myopia be of sufficient degree, the younger the patient the more favorable the case, although the lens may be removed at any age—ordinarily, however, not under 10 nor over 15 years of age. It is commonly conceded that the degree of myopia should be 14 or 15 diopters or more. Other considerations influencing the selection of cases are when vision is not improved by glasses; when there are no serious fundus lesions; when the vision is very low even with the best glasses, and where there is divergence and no longer binocular vision. We naturally hesitate when the patient has only one eye, but even here, if the vision is low, the conditions otherwise favorable, and glasses do not give satisfactory vision, it would seem indicated. Reported cases: There have been 2,500 of these operations reported from abroad, but not quite 50 in America. This disparity may be explained partly by the fact that myopia, especially of high degree, is far more prevalent abroad, partly, too, because foreign surgeons have an almost decisive influence and control over their patients.

Methods: (1) Direct linear extraction in the young. (2) Direct extraction after the usual cataract method in patients over 50. (3) Repeated discissions. (4) Discission with linear extraction (Fukala). The first is open to obvious objection, the difficulty of knowing how much of the lens has been removed, etc. The second can be done in the unusual cases where age makes the lens susceptible to ordinary extraction, though Fukala states that myopic lenses may be removed by discission up to the age of 60 years. The third method is open to the objection of consuming time and discouraging the patient. There is also the added danger of infection on account of the number of times that the globe is entered. The claim that the danger of separated retina is less has little weight. The fourth method (Fukala's operation), free discission with linear extraction, is, in the light of wide experience, the now well-established method. The incision should be so placed as to counteract any corneal astigmatism. The writer makes further remarks on the operation and the after treatment.

The contraindications to the operation are: (1) A known hemorrhagic tendency. (2) Chorioidal degeneration and lesions in the macular region. (3) Loss of one eye. (4) Advanced age. (5) Ability to see well with the myopic correction. There follow remarks upon all these points.

The advantages of removal of the lens are three-fold: 1, visual; 2, muscular; 3, antipathological. Vision is commonly improved from one to five times or more. This is due not alone to increase in size of the retinal images, but also to increased illumination and to the fact that there are no longer any lens reflexes. It is the opinion of most operators that the progress of the myopia, as well as of certain fundus lesions, is arrested.

The dangers of the operation: (1) Hemorrhage and loss of vitreous, (2) detachment of the retina, (3) incarceration of the iris or capsule, (4) glaucoma, (5) iritis, (6) infection. The liability of hemorrhage, etc., seems to be slight. Detachment of the retina occurs in only 3 to 5 per cent. of the cases; it might occur without the operation.

Justifications: (1) When vision can not be improved by glasses; (2) when there are no serious fundus lesions; (3) when the myopia amounts to 15 diopters or more; (4) when there is evidence that the degree of myopia, already high, is increasing.

Optical and physical effects: (1) Alteration of refraction, (2) improvement of vision, (3) loss of accommodation, (4) changes in muscular action, (5) the prevention of the increase of the myopia, (6) the arrest of the progress of chorioidal lesions. The alteration in refraction consists in a reduction of the myopia of from 14 to about 22 D. Although accommodation is lost, there is developed in many an aphakial accommodation. The improvement in vision is an increase of from one to four times the original vision and sometimes it is more than this. The changes in muscular action consist in a stimulation to convergence, tending toward binocular single vision. There is a less dynamic visual act and this tends to stop the increase of the myopia and of the pathologic changes. The last is denied by Panas, Fuchs, Coppez and Pergens.

The results of successful removal are immediate and remote. Immediate—Pronounced reduction in the amount of myopia;

marked improvement in distant vision; distinctness of vision markedly increased; accommodation abolished; convergence relieved; enlargement of the retinal images. Remote effects—Continued improvement in vision; cultivation of the so-called aphakial accommodation; restoration of binocular single vision; general passivity of the visual act. All these points receive some comment, and there are further remarks on some dissenting views. A full bibliography follows. E. E. J.

MYOPIA—OPERATION AND DETACHMENT OF THE RETINA.—VON HIPPEL, A., Goettingen. (*Deutsche med. Woch.*, 1905, No. 26, p. 1,032.) Hirschberg and Schmidt-Rimpler raise the following objections against operative treatment of myopia: (1) Possibility of infection; (2) increase of intraocular pressure after discission; (3) hemorrhages, occurring months and years after the operation, at the center of the retina, and central chorioretinitis; (1) the most important, detachment of the retina. Von Hippel answers: (1) That the danger of infection is not greater than in any other intraocular operation; (2) that, by puncture of the anterior chamber and evacuation of lens matter, the danger can be readily removed; (3) these conditions are not due to the operation, but a consequence of the pathologic changes of the eye in progressive myopia.

With regard to detachment of the retina, the statistics of different authors so far did not adhere to a uniform principle. If one includes in his statistics myopia from 6 D. on, another from 10 D. or 12 D., the results are not fit for comparison and the whole compilation of the different statistics is valueless. Therefore only those degrees of myopia are to be considered which give an indication for operation, i. e., from at least 14 D. on. Since the danger of detachment of the retina increases with the degree of myopia, similar cases must be compared to gain an idea of an eventual detrimental influence of the operation. Von Hippel inquired, by circular letters, about the present conditions of all his cases operated on and gathered statistics on spontaneous detachment of the retina in myopia greater than 14 D. from his journals on 100,000 patients of the policlinic. From 1893 to 1905 von Hippel operated for myopia on 275 eyes, 149 unilateral, 63 bilateral. No further information could be obtained from 12 patients, but he has careful records of 263 eyes, in 25 of which (9.5 per cent.) detachment of the retina occurred. A careful examination of his table, however, shows that in a great contingent of these eyes the detachment was due to the high myopia, not to the operation. There is no certain limit of time from which on the detachment is to be considered as spontaneous. Von Hippel thinks to go very far, if he places this at the beginning of the third year after the operation. Under this assumption, the detachment in his patients was possibly due to the operation 13 times, i. e., 4.9 per cent. In 7 of these von Hippel attributes the detachment to too frequent operations he undertook, yielding to the solicitations of his patients. In the remaining 6 the cause of the solution seemed doubtful, since neither the operation nor the course of healing gave a direct provocation.

Out of 100,000 patients, 529 had myopia greater than 14 D., i. e., 0.53 per cent. in 842 myopic eyes, in 53 of which spontaneous detachment of the retina was observed, i. e., in 6.3 per cent. This, very likely, is still too low, since quite a number of unilateral detachments were not admitted to the statistics, since, in the policlinic journals, reports on the degree of myopia of the other eye were lacking. Only those were included in which the seeing eye had at least M=14 D. This coincides with von Hippel's former statistics on 69,000 patients (6.7 per cent.) If it is thus proved that of all highly myopic eyes, available for operation, about 6.5 per cent. will be afflicted with spontaneous separation of the retina, the 9.5 per cent. of those operated on by von Hippel can not be charged to the operation. A most certain information on the frequency of detachment in myopic eyes operated on and of spontaneous origin will be reached by comparing later on the eyes of persons operated on only on one eye. Out of 149 of von Hippel's cases the detachment was observed in 7 eyes spontaneously (4.7 per cent.), in 9 eyes (including 2 not quite certain cases) operated upon (6 per cent.)

By his figures von Hippel proves that it is not justified to denounce the myopia operation. In suitable cases, carefully performed, it returns capability to work and enjoyment of life. Only a small proportion may lose what they gained, but the large majority retains a lasting benefit. Our aim must be to further improve the technic of an operation which has proved useful and inestimable to thousands. C. Z.

OPERATIONS.

ADVANCEMENT IN PARALYTIC SQUINT.—OHM, Berlin. (From the clinic of Professor Froehlich; *Klin. Mon. f. Aug.*, 1905, i. p. 666.) Instead of weakening another muscle by tenotomy of the antagonist of the paralyzed muscle it is more rational to strengthen the latter by advancement. This can be done a few weeks after the onset of the paralysis without risking an interference by later spontaneous recovery of the paralysis. Ohm illustrates this by the good results he obtained by advancement in 5 cases, which are reported in detail. C. Z.

OPERATIVE CASES OF CONVERGING STRABISMUS, WITH PHOTOGRAPHIC ILLUSTRATIONS.—BANE, W. C., Denver (*Colorado Med.*, May, 1905), gives the clinical histories of a number of operative cases of strabismus, and illustrates some of them with photographs. In deciding upon what operation he shall do the author is governed by the age of the patient, the duration of the convergence and the amount of the deviation. W. R. M.

CYCLODIALYSIS, A NEW OPERATION FOR GLAUCOMA.—HEINE, First Assistant. (From the Eye Clinic of Professor Uhthoff, Breslau; *Deutsche med. Woch.*, 1905, No. 21, p. 824.) Axenfeld observed, in 10 per cent. of the operations for glaucoma (sclerotomy, incision of the sinus of the anterior chamber, and iridectomy), detachment of the chorioid, and raised the question whether this detachment had any bearing on the curative effect of iridectomy in glaucoma. This was the incentive for Heine to investigate, on blind eyes with increased tension, whether an artificial communication between anterior chamber and supra-chorioidal space would lower the intraocular pressure. Heine proceeded in the following way: Eight to 9 mm. upward and outward of the corneal limbus the conjunctiva is incised and the flap reflected on the cornea. A catgut suture is carried through the apex of the flap and the corresponding corner of the conjunctival wound. After bluntly removing the episcleral tissue, the now freely exposed sclerotic is carefully incised 4 to 5 mm. from the limbus, with a straight, lance-shaped knife, not more than 1 to 2 mm. A stylet, bearing on its concave surface 5 transverse marks at distances of 1 mm., is introduced and, close to the inner surface of the sclerotic, pushed forward to the fourth mark, when the resistance of the ligamentum pectinatum is felt. After this is slowly pierced, the stylet is visible in the anterior chamber. By lateral excursions this cyclodialysis is enlarged 2 to 3 mm. upward and downward. No aqueous escapes if the instrument is slowly extracted. If, however, an evacuation of some aqueous is desired the stylet may be pressed toward the globe or a little tilted. Finally, the suture is tied. Tension is the same after the operation if no aqueous escaped and diminished after two to three days. After escape of aqueous tension is at once diminished. The results in 20 blind eyes, with increased tension, were encouraging, and show that cyclodialysis diminishes lastingly the pathologically increased intraocular pressure.

C. Z.

The Transplantation Method for the Treatment of Trichiasis, and New Instruments for the Operation.—Briganti, P., New York (*Archives of Ophthalmology,* May, 1905), has modified Scimemi's margino-plastica operation and has devised new instruments for performing it.

The original Scimemi's operation consisted of an incision in the margin of the lid, as long as the trichiasis required and deep enough to insert a skin flap taken from the outer surface of the lid. The skin wound was connected with the marginal incision by two vertical cuts, one at each end, through the thickness of the ciliary border. The flap was then shifted into the marginal incision and the skin wound sutured.

Sgrosso later modified this operation by abolishing the vertical cuts and shifting the flap into the marginal section by rolling it over the lashes. After the flap became attached the bridge-like portion was cut.

Briganti has modified this operation by prolonging the marginal cut at each end in order to connect it with the skin wound. The prolongation of this incision is made in as nearly a straight line as possible. The author states that the cosmetic result is decidedly more satisfactory.

For this operation the author has devised a marginal forceps, right and left, and flap forceps. W. R. M.

On Combination of Excision of the Thyroid Gland with Roentgen Therapy in Graves' Disease.—Beck, Carl, New York (*Berliner klin. Woch.,* 1905, No. 20, p. 593), observed striking improvement of tachycardia and nervous condition after a few sittings with x-rays in two women, in whom he had removed one-half of the thyroid gland 13 and 18 months previously. A third case is reported in detail, in which exophthalmus and tachycardia completely subsided under x-rays, applied immediately after wound healing. Beck attributes these favorable results to the specific influence of Roentgen rays on the walls of the blood vessels in Graves' disease, which is characterized by abundant vascularization. He advocates, in lighter cases, general treatment, combined with energetic Roentgen therapy, preceded by extirpation of one-half of the thyroid gland in the more severe. C. Z.

A Very Simple Operation for Glaucoma.—Haberkanp. (*La Clinique Ophtalmologique,* July 10, 1905.) Haberkanp states that no ocular affection claims from ophthalmologists more decision than does glaucoma. An operation being decided upon, the timid patient resists, and the assurance of the surgeon gives way in the face of the importance and difficulties of the intervention. In the meantime the pain on the one hand and the danger of blindness on the other brings the decision for operative interference when it is without effect. In many cases simple puncture of the anterior establishes a sort of compromise between patient and surgeon. But the puncture ordinarily requires the same preparation that an iridectomy does. Therefore Haberkanp has sought a measure which would be practicable without preparation, and which might be done in a consultation room or at the home of the patient. While Haberkanp claims no originality in the procedure he proposes, he has been unable to find it mentioned in the literature. The method is a paracentesis by galvano-puncture of the anterior chamber—the healing of the puncture being slow, a prolonged effect is had, greater than would be the case from an ordinary paracentesis. Haberkanp reports two cases treated by this method. The first case was cured; in the second the patient was blind from fulminating glaucoma, suffered agonizing pain, and enucleation was at first deemed essential; galvano-puncture stopped the pain, and the necessity of removing the eye was done away with. B. E. F.

Some Indications for Enucleation.—Valois, Noulins (*L'Ophtalmologie Provinciale,* October, 1904). Valois adopts as his indications for enucleation of a wounded eye the absence of vision accompanied by grave alterations in the structure of the organ. He includes all those cases in which, with a penetrating wound of the cornea or sclera there has been a loss of vision, particularly when there is a prolapse of the iris. The author believes that the removal of the dread of sympathetic inflammation is one of the most important benefits of enucleation. C. van E.

OPTIC NERVE.

The Course of Optic Neuritis and Its Subsidence After Operation in Cases of Cerebral Tumors.—Paton, Leslie, London. (Report of the June meeting of the Ophthalmological Society of the United Kingdom; *The Brit. Med. Journ.,* June 17, 1905.) Paton analyzed a series of 105 cases which had occurred at the National Hospital during 1903 and 1904. Of these cases there were 30 in which it was possible to examine more or less fully the eye condition after operation, and these cases fell into four groups as regards vision: (1) There were 8 cases in which the vision was little if at all impaired. (2) In 11 cases the patients were blind or almost blind before the operation, and afterwards their vision recovered, in some even up to normal acuteneess of sight. In Group 3 were those cases which were practically blind at the time of the operation and which regained no vision (6 cases), and also those in which the vision failed markedly in spite of the operation (2 cases), giving a total of 8 cases out of 30 operated upon which did not save the sight. In Group 4 were 3 cases in which one eye retained good vision while the other became blind or nearly so. A notable symptom in these cases was attacks of transient dimness of vision, which occurred most frequently in the celebellar cases, and were most probably dependent upon interference with the vascular supply of the occipital lobes. In different cases the optic neuritis showed different appearances, and the cerebellar cases showed more swelling of the disc than did those in which the tumor was situated in the frontal or parietal lobes, while muscular changes appeared only in a small number of cases, and even when these were present they were not necessarily associated with any interference of vision; this was in favor of the changes being superficial. The intradural tension was in all cases high. The swelling of the disc subsided gradually, but more rapidly in cystic cases, while in those which led to blindness the disc assumed a papery-white appearance, with arteries much diminished in size. In some cases where the sight was retained the disc had usually a muddy grayish-pink appearance, but this tended to disappear, and in some of the cases it was impossible to tell from the appearance of the disc that there had ever been optic neuritis at all; this was so in one case where there had been extensive macular changes, but the vision recovered to 6/6.

C. H. M.

A Case of Sympathetic Retrobulbar Neuritis.—Consiglio. Antonio. (From the Eye Clinic of Prof. E. Fuchs, Wien; *Beitr. zur Aug.*, Heft 63, p. 117.) The left eye was injured by explosion of a dynamite cartridge and, having become blind, was enucleated. The anatomic examination did not reveal the characteristic picture of ophthalmia exciting sympathetic ophthalmia as described by Schirmer and others, viz., infiltration of the choroid. There was no infiltration of the optic nerve extending backward, but a very marked edematous swelling of the optic disc. The right eye was also injured, and particles of stone were seen in the iris and vitreous, but the fundus showed no signs of injury. The optic disc was later on a little pale toward the temporal side. V.=fingers at 3 m. Visual field was concentrically contracted and there was a central scotoma, due to retrobulbar neuritis. This could not be considered as a remote consequence of the injury of the right eye since optic disc and retina were at first normal, but was most likely of sympathetic nature. The inflammatory process must have traveled from the left eye to the right optic nerve in a similar fashion as in sympathetic papillitis of which several distinct cases are known. It is a very rare case, and Consiglio could find in literature only one other, by Rosenmayer (*Arch. f. Aug.*, 28, p. 71). C. Z.

ORBIT.

POST-ORBITAL ANEURYSM.—BURGESS, MILDRED, London (*Lancet*, July 22, 1905), reports the following case from the service of Mr. James Berry:

The patient was a woman, aged 45. She had had eight children, the last five years ago. Within five hours of the birth of the child she suddenly felt intense pain in the head, chiefly over the right orbit. It was followed immediately by a snap, as if something had burst in the head, and accompanied by a loud, rushing sound. Three weeks later her mental condition became impaired. She was sleepless and talkative, mistook identities, and had olfactory and visual hallucinations. Exophthalmic ptosis and complete facial anesthesia developed on the right side. There was great thirst and polyuria, some deafness of the right ear, in which she heard a rushing sound, and a murmur synchronous as with the pulse could be heard here with a stethoscope. The right eye was anesthetic. There was severe conjunctivitis and a corneal ulcer, which disappeared under treatment, and a paralysis of the right external rectus. The pupil did not react to light or accommodation.

The diagnosis was made of aneurysm of the right internal carotid near the cavernous sinus, involving the sixth, the superior maxillary and ophthalmic branches of the fifth, and the fourth and third nerves partially, probably produced by embolism.

The internal carotid was tied by Berry about one inch above the bifurcation. After ligature there was no change in the pulse nor in the heart action. The rushing noise in the head ceased immediately and no murmur could be heard. There were no mental symptoms, and the patient was able to sleep. The sensation in the face gradually improved. The local condition of the eye remained unchanged except that proptosis was not so marked.

P. H. F.

PARASITES.

CYTORRHYCTES LUIS SIEGEL.—SCHULZE, FRANZ, Eilhard, Berlin (*Berliner Klin. Woch.*, 1905, No. 21, p. 653), describes the parasite discovered by John Siegel at the zoological institute in the University of Berlin, in smallpox, mouth and foot disease of cattle, scarlet fever and syphilis. It is visible only under very high magnifying power (1,000 diameters) with the best apochromatic oil immersions, has a pear-shaped form, flattened on both sides, with flagella on the smaller end, and, in hematoxylin-azur staining, two globular nuclei behind one another (in sections of primary indurations of man). The parenchymatous juice of kidneys of monkeys and rabbits, three weeks after syphilitic infection, at the time of the first exanthematous symptoms, is the best object for examination. C. Z.

PATHOLOGY.

ALTERATIONS FOLLOWING EXTIRPATION OF THE SUPERIOR CERVICAL SYMPATHETIC GANGLION.—GASPARRINI, ELVIDIO, Torino, Italy. (*Annals of Ophthalmology,* April, 1905.) After four pages of bibliography the author reports the results of his own investigations on rabbits, cats, dogs and monkeys, and finally reports in detail his experiments upon four dogs and one monkey. In each animal the left superior cervical sympathetic ganglion was removed. These ganglia were examined microscopically, and later, when the animals were killed, the ganglia of the opposite sides were subjected to a similar examination. The retina and optic nerves of both eyes were also examined microscopically. During the time the animals were under observation, after the operations, eserin and atropin were used to determine their comparative action upon the pupils of the two eyes. He concludes that important phenomena follow the extirpation of a superior cervical sympathetic ganglion, that important sclerotic changes do take place in the ganglion of the other side and that this fact is clear proof that both sympathetic systems are connected, so that an injury on one side is followed by alterations of the other side. "These connections are proved by myotic and mydriatic substances also. Directly after extirpation atropin is less active on the operated side; eserin is more active on the same side. After some time both eyes are equal, but it is not the eye of the sympathectomized side which returns to the normal, but it is the other side that comes to the same conditions." After a few months' time the dogs and the monkey developed symptoms of paralysis of the hind legs which gradually extended forward until the animals could not stand. They became emaciated, and would not eat. Death would have soon followed had they not been killed. M. B.

PHYSIOLOGY.

NEW EXPERIMENTS OF THE VISIBILITY OF ROENTGEN RAYS.—CRZELLITZER, Berlin (Roentgen-Congress; *Berl. Klin Woch.*, 1905, No. 20, p. 627), proved that the retinal center, an area of about 25 mm., is blind for Roentgen rays. Therefore all efforts with Roentgen rays to enable the blind to read are in vain. C. Z.

REFRACTION.

ABNORMAL REFRACTION AND EYE STRAIN.—BURNHAM, G. HERBERT. (*The Canadian Practitioner and Review*, Aug. 1905.) The author describes the varieties of abnormally refracting eyes and says that errors of refraction lie at the root of 50 per cent. or more of all diseases of the eye; that 60 to 80 per cent. of headaches are due to eye strain; that often due to eye strain there is a passive lethargy and weakness of the whole nervous system or marked digestive disturbances, disorders of the bowels of various kinds, intense neuralgia, great dizziness and epileptic fits. In regard to the testing of eyes for glasses, the experienced oculist realizes how difficult it often is to make an eye take the proper glass. The glass with which the eye can see 20/20 is not always the correct one.

As to mydriatics, the author has no hesitancy in giving the first place to atropin to the exclusion of the homatropin or any other, he considers that with homatropin any effect will be too superficial and short lived to be of any benefit.

In cases of heterophoria the cutting and readjusting of muscles is of secondary importance to the accurate correction of errors of refraction.

The author notes that many improper functional activities of various organs of the body often give rise to nerve-storms, simulating every known phase of abnormal nerve-center conditions, structural and non-structural, and that very many varieties of these storms are due to improper activity of the eye. F. A.

LATENT HYPERMETROPIA, THE CAUSE OF THE DIFFICULTIES ATTENDING REFRACTION WORK.—DIXON, LEWIS S., Boston. (*Annals of Ophthalmology,* April, 1905.) "Why is it that refraction work, with its increasing demands upon every oculist's time and attention, is so tedious and so unsatisfactory in its results, notwithstanding all the patience and earnest work bestowed upon the subject? Why are relief and success so great in some cases, and so hard to obtain for the majority of those suffering from the same symptoms? Why are the gratifying results we do get often so temporary, and after a while our work need to be done over again?

Why do so many patients drift from one reputable oculist to another, searching for help that no one seems able to give them?"

The author believes he has found an answer to these questions. He thinks latent or undiscovered hypermetropia is the key to the situation, and that with more care bestowed in searching for this latent error and its correction, the patient and the oculist will both be satisfied. His paper is largely an argument in support of his contention that the ciliary muscle, because of years of habit, does not completely relax even under a cycloplegic. He does not go into very much detail regarding his method of making it relax, but we assume that by urging the patient to accept more plus lens than corrects the manifest hypermetropia he finally arrives at the total error. If the eye accepts for an instant only a stronger plus lens, it is positive evidence that that much more hypermetropia exists and should be corrected. We also assume from the text that he fogs the vision by prescribing stronger plus lenses than are accepted. That these same lenses may after being worn a while admit of clear vision and even stronger be finally accepted. If not, such reduction is made as give both comfort and clear vision. M. B.

Correction of Astigmatism by Tilting Lenses.—Percival Archd. Stanley. Newcastle-on-Tyne. (*The Ophthalmoscope*, June, 1905.) This procedure is only applicable with very strong lenses, especially for the correction of aphakia. A + 10 D. lens inclined 24 downwards, is almost exactly equivalent to a + 10.5 D. sph. ⌒ + 2 D. cyl. ax. 180. The following table gives the equivalents of a 10 D. lens tilted downwards:

Obliquity of Lens.	Spherical Equivalent.	Cylindrical Equivalent. Axis Horizontal
10	10.0995	.3179
15	10.2558	.7039
20	10.4027	1.3781
25	10.6893	2.3246
30	10.9361	3.6454
35	11.2974	5.5390
40	11.7295	8.2586

In aphakia, this method is only suggested for economical reasons, as a much better periscopic effect is produced by ordering a spherocylinder. M. B.

REFRACTION AND ACCOMMODATION.

Modification of the Corneal Curve as Influenced by Subconjunctival Injections; Their Action Upon Astigmatism.—Deschamps. (*La Clinique Ophtalmologique*, May 25, 1905.) The writer states that subconjunctival injections, no matter what the fluid, set up an active irritation, and when repeated result in union of the conjunctiva with the sclera, the conjunctival mucosa ceasing to be mobile on the globe surface and becoming practically cicatricial, while in the normal condition it is easy for the conjunctival surface to glide upon the sclerotic. It is then quite difficult to seize the conjunctiva with the fixation forceps. There is, in other words, a modification of the conjunctiva in the corneal region due to contraction and a change in the corneal curve. One of the first cases to attract Deschamps' attention was in a patient with corneal ulcer, who had been treated with a series of subconjunctival injections—a complete cure following. Patient had been examined several months previously as to his refraction, and then there was found hyperopia, 0.50 D. After the injections there was a hypermetropia of 2 D. This was of great inconvenience to the man, for now anisometropia existed and an asthenopia resulted from the difference in accommodative efforts of each eye. After a series of observations, Deschamps became convinced that the cornea was drawn upon by the conjunctival retraction and by the partial adhesion between sclera and conjunctiva, the hyperopia resulting.

A second case, with both eyes emmetropic, as shown by a careful examination with the exophthalmometer and by retinoscopy, was wounded in one eye by a large piece of iron which penetrated the globe but was extracted by electro-magnet. Unfortunately, in the fellow eye sympathetic ophthalmia developed, and it became necessary to enucleate the injured eye and employ active treatment to the sympathizing organ, subconjunctival injections of cyanid of mercury being given, though not more than four—two in the region of the superior rectus and two in the region of the inferior rectus—and though this arrested the sympathetic trouble, the patient developed an astigmatism of nearly 2 D. against the rule—the correcting glass making V. normal, while without it V. was notably lessened. Guided by these observations, Deschamps has considered as to the treatment of slight regular astigmatism by the method subconjunctival injections, and, while his experience is not great, his results are encouraging. The cases chosen were of regular astigmatism, axis vertical; and Deschamps made as a minimum four injections, two above and two below the cornea, as a maximum eight injections. The amount used at each injection was five or six drops, but this may be reduced if the action is to be limited, and at the third injection not more than two drops may be needed. At first cyanid of mercury (1/5,000) was tried, but, this proving painful, a 4 per cent. sodium chlorid solution was employed, which is not very painful. B. E. F.

RETINA.

Retinitis Punctata Albescens.—Beaumont, W. M., Bath. (*Brit. Med. Jour.*, July 8, 1905.) Farm laborer, aged 26, complained of occasional muscæ volitantes in the right eye and, on rare occasions, headaches. His father and mother were not consanguineous. The urine was 1016, acid, and contained no albumen. The fundi were found to be studded with whitish, unpigmented punctate retinal spots, irregularly scattered in all directions, suggesting the appearance of stars on a November night. In the right yellow-spot region the spots were numerous; in the left there were four stars, one of them of the first magnitude, arranged in a cruciform manner. In both eyes the spots varied somewhat, both in size and whiteness, while some were yellowish. They were confined to the anterior layer of the retina. The patient's general health was good, his vision was 6/6 with each eye; his field of vision was full, and he could read J. 1 at 33 cm. There was no color blindness, and he had never suffered from night blindness.

The condition has probably existed since intrauterine life, and is probably due to retinal sclerosis. If a retinal degeneration had occurred since birth, it is improbable that sight would have remained normal, seeing that the yellow-spot region is affected in each eye. The case would appear to be an ophthalmic curiosity and nothing more. P. H. F.

Fibrillary Edema of the Following Contusion.—Fridenberg, Percy, New York, (*Archives of Ophthalmology*, July, 1905), reports a case of fibrillary edema of the retina which he observed, in its development, in a case of intraocular injury due to blunt violence. There was no hemorrhage and no direct or localized injury of the retina, but a slight serous effusion in the macular regions, and a fibrillary edema of the nerve fibers radiating from its vicinity, due to the concussion. Ophthalmoscopic examination showed the retina around the macula somewhat edematous, and fovea red, with a yellow crescentic reflex at its center, and surrounding it an oval silvery-white ring. Radiating from the oval opacity were a number of fine, milky-white striations which appeared to be in the nerve-fiber layer. The author differentiates it from Berlin's opacity (traumatic retinal edema), and shows an analogy between it and the pathogenesis and ophthalmoscopic appearance of edema and sclerosis of the lens fibers.

Fridenberg believes the most natural hypothesis to be the possibility that the fibrillary edema may be due to the soaking, by the nerve fibers, of the serum which had transuded into the parenchyma of the retina from the paretic capillaries and veins of the retina and chorioid. W. R. M.

DISAPPEARANCE OF MEDULLATED NERVE FIBERS IN THE RETINA AFTER INFLAMMATORY ATROPHY OF THE OPTIC NERVE FROM CEREBRAL TUMOR.—SACHSALBER, A. (From the Eye Clinic of Professor Dimmer in the University of Graz; *Zeitschrift fuer Aug.*, 1905, xiii, p. 739.) So far literature contains only one case of this kind, viz., the observation of Wagenmann (v. *Græfe's Archiv.* 40), after genuine tabic atrophy.

Sachsalber's case is unique, as the condition of the medullated fibers could be pursued in inflammatory atrophy of the optic nerve. In the left eye, of a man, aged 51, an almost quadrangular patch of medullated nerve fibers, one corner forming a convex arc and overlapping one-eighth of the lower nasal area of the optic disc, extended more than 1 disc diameter downwards and inwards, ending sharply at the inferior nasal artery. It had a greenish-white color, characteristic luster and a radial striation, terminating flamelike. Within the patch a branch of a large vein was visible, which, during its radial course, submerged twice for short distances, emerging at the flamelike border and proceeding uncovered. V. and V. F. were normal, with the exception of a slight enlargement of the blind spot. At the examination 2½ years later, after the patient had become blind in a short time from tumor of the brain, the optic disc was greenish-white and showed various round, irregularly formed, striped elevations. It projected 4 to 5 diopters, and the so-called physiological excavation was filled by an opaque protruding area, surrounded by several superficial hemorrhages. The blood vessels were thinned and, although the walls of the veins were thickened, surrounding them as white streaks, their tortuosity gave the impression of engorgement. The area, formerly occupied by the medullated fibers, was discolored and presented the same tint as the remaining fundus, but the connective tissue showed some peculiarities. The rounded corner of the patch, encroaching upon the disc, had diminished by one-half, leaving an intense white round spot, giving the impression of a nodule, and the border of the disc had become visible. The trapezoid, intensely white, dense patch, was replaced by a few and far between white lines, which could be traced farther than the former medullary sheaths. The vein, entering into the patch, which before was interrupted, could even be seen in its entire length and the sections formerly hidden by the medullated fibers occupied a lower level in the retina than those which had always been visible. The white lines were unequally wide in their course and were partly linked. Only at the inferior nasal artery they became condensed to numerous fibrous tracts which could be followed up to the white patch at the disc. Sachsalber considers them an interfibrillar proliferation of the supporting tissue.

The right eye showed inflammatory atrophy of the optic nerve, with an elevation of 4.00 D., engorged veins and relatively thin arteries.

The case was undoubtedly a brain tumor with characteristic symptoms: Hyperosmia, transient ocular palsies, complete anosmia followed by bitemporal hemianopia, amaurosis, paralysis of auditory nerve, headache, vertigo, vomiting, general convulsions, and finally choked discs.

A cardinal difference between Wagenmann's case and this one was that in the former the atrophy of the medullar substance in the fibers takes place earlier than the loss of function. In Sachsalber's case the atrophy of the medullated nerve fibers developed secondary to the central destruction, after the function had long been abolished. C. Z.

CASUISTIC CONTRIBUTION TO THE ACTION OF PRESSURE BANDAGE IN DETACHMENT OF THE RETINA.—WESSELY, KARL, Berlin. (*Klin. Mon. f. Aug.*, 1905, 1, p. 654.) The pressure bandage in detachment of the retina is gradually being abandoned and has been denounced, e. g., by Leopold Mueller and Sattler. Wessely reports a case of myopic detachment of the retina in a woman, aged 42, in which he obtained a perfect cure by applying a tight pressure bandage, and became strongly convinced of its therapeutic effect, the more so, as he had observed this successively at three different times after intermittent relapses in the same case. The chief objection against pressure bandage was that it diminishes intraocular pressure, and this seemed unlogical in detachment of the retina, in which the intraocular pressure is generally lowered. To decide the question whether diminution of intraocular pressure produces detachment of the retina, Wessely made the following experiments: Two small blunt hooks were introduced behind the eyeballs of cats and dogs, after widening the palpebral fissure, applying their flat portions, bent off at right angles, to the posterior segment of the globe. The handles of the hooks bore strings, on which a weight of 700 g. was attached. After being exposed to this pressure for an hour, the eyes were very soft, remaining so for 3 to 5 days. Since the anterior chamber had the same depth after the experiment as before, the diminution of intraocular tension was obtained merely by pressing out the vitreous humor. Not one detachment of the retina could be observed in these eyes, which were absolutely normal externally and ophthalmoscopically. And even if in such eyes artificial detachments of the retina were produced by applying steam (according to the author's method, described before the Tenth Ophthalmological Congress), they were neither more extensive nor were reattached later than on the previously intact second eye. From these experiments it appars that diminution of the volume of the vitreous without loss of its structural substance (and this alone is to be considered in discussing diminution of intraocular pressure as a consequence of a pressure bandage), does not play such a deleterious part with regard to the etiology of detachment of the retina and its reattachment. Wessely, therefore, warns against denouncing, from mere theoretic reasons, remedies formerly so extensively used.

C. Z.

CASE OF RETINAL HEMORRHAGE WITH DELAYED MENSTRUATION.—THOMAS, FRANK G., M.B., B.C. (*The Ophthalmoscope,* July, 1905.) Miss L. M., aged 19 years. Menstruation delayed three days. Hemorrhage between retina and vitreous. Recovery slow, extending over a year's time, but was complete and with normal vision.

M. B.

EARLY DETACHMENT OF THE RETINA IN CASES OF SARCOMA OF THE CHORIOID.—PARSONS, J. HERBERT, London. (*Ophthalmic Review,* June, 1905.) Since 1901, the writer has examined anatomically 50 cases of sarcoma of the chorioid and ciliary body; some of these cases were in an early stage and called attention to the frequency of detachment of the retina in such instances. "Usually the retina is not extensively detached in the immediate neighborhood of the tumor, it is merely raised by the growth, with which it lies in immediate apposition. In the lower hemisphere, however, there is often an extensive shallow detachment. If the growth is in the upper part of the fundus this detachment is wholly separate from it, the retina being in normal apposition to the chorioid in the intervening area. If the tumor is near the horizontal meridian of the eye the retina may be apposed to it above, whilst below it merges into the inferior detachment, separated from the chorioid by albuminous coagulum. Every stage may, therefore, be met with from a small isolated tumor with a simple detachment of the retina over the lower hemisphere, to a more extensive detachment continuous with that over the growth, ending finally in the infundibular detachment which is well known in the latest stages, the retina here being completely detached from the chorioid."

The writer gives brief histories of eight illustrative cases, although these do not represent a just estimate of the occurrence in the total number of cases examined. These cases prove:

1. That detachment of the retina occurs earlier in sarcoma of the chorioid than would be gathered from the ordinary text-book description.

2. That, apart from the elevation at the site of the growth, where there is no true detachment in the early stages, the detachment manifests itself invariably as a shallow, simple detachment over the lower hemisphere.

3. That this detachment is frequently entirely isolated from the tumor, the intervening retina being in normal apposition to the chorioid.

4. That this is invariably the case when the tumor is in the upper hemisphere; when the detachment is continuous with the elevation at the site of the tumor it is, in the early stages, merely due to the accident of the position of the growth, i. e., near or in the lower hemisphere.

5. That this isolated detachment is simply the first stage of the total detachment which eventually supervenes.

These deductions do not apply to the earliest stages of sarcomata of the ciliary body, for here there is no detachment of the retina, the pars ciliaris retinæ remaining closely applied to the surface of the growth. It is only at a later stage when the tumor encroaches upon the chorioid that detachment of the retina occurs.

The detachment is due to secretion of fluid from the chorioid, the tumor acting as an irritant so that an excess of fluid is poured out from the vessels; there is histological evidence of this in the round-cell infiltration found in the quasi-normal chorioid at the periphery of the growth. In the case of the ciliary body the pars ciliaris retinæ is firmly adherent, and can not readily be raised; nor can the fluid pass into the space between the retina and chorioid, owing to the firm attachment at the ora serrata. Hence the fluid passes direct into the vitreous and is excreted at the angle of the anterior chamber. It is probable, too, that the lymph flow within the ciliary body is freer than in the chorioid, so that excess of lymph is, to a large extent, carried off by the perivascular lymph spaces around the perforating veins. In the case of the chorioid the fluid accumulates beneath the retina, at once gravitating to the lowest part. Hence the detachment invariably commences in the lower hemisphere.

The fluid secreted is not normal lymph of the eye, but a highly albuminous fluid resembling blood plasma; this is due to the engorged and diseased chorioidal vessels, the walls of which are unable to prevent the albuminous constituents from filtering out. The character of the fluid explains the accumulation beneath the retina and also the supervention of glaucoma; the imprisonment of the fluid and its inability to filter out of the eye force the lens and iris forward and this blocks the angle of the anterior chamber.

"That the recognition of the fact that detachment of the retina, isolated from the tumor, occurs early in the history of sarcoma, is of great clinical importance, is demonstrated by the clinical notes of the cases recorded. The most common error is happily one of comparatively little importance, viz., the failure to recognize the shallow detachment in the lower hemisphere. The presence of a chorioidal growth is correctly diagnosed, but the inferior detachment of the retina escapes observation. Another and more serious error is the diagnosis of the inferior detachment as an idiopathcic detachment, the tumor being missed." The latter error is illustrated in a case in which the tumor was beyond the limits of the field of ophthalmoscopic vision. Here the presence of a tumor was only demonstrable on dilating the pupil to its widest extent, and then only on very oblique examination.

"It is noteworthy that the tension is not necessarily raised at the stage in which the inferior detachment is already present; indeed, it is seldom raised until the detachment has become general.

"It is therefore of the utmost importance that in all cases of apparently simple detachment of the retina the most careful search for a tumor should be made by thorough investigation of the field of vision, and by thorough examination with the ophthalmoscope and by oblique illumination with the fully-dilated pupil."

C. H. M.

SINUSES.

Some Ophthalmological Phases of Diseases of the Accessory Sinuses of the Nose.—Posey, William Campbell, Philadelphia. (*Journal of Eye, Ear and Throat Diseases,* March-April, 1905.) The writer gives the brief histories of a series of cases which presented some early and but slightly marked symptoms of diseases of the accessory sinuses of the nose. He believes that such cases are not infrequent and as the ocular manifestations often precede all others and may be the cause of the patient's sieekng medical aid, it is very desirable that ophthalmologists should be acquainted with them and be able to refer them to their proper source. The more striking and advanced ocular symptoms of diseases of the sinuses are now generally recognized, but the symptomatology of the class of cases just referred to appears to be but little understood as yet.

"This can, in all probability, be accounted for by a lack of comprehension by ophthalmologists of the precise nature of sinus affections, for it is to be feared that unless the symptoms occasioned by a sinusitis are so patent that their significance can not be misunderstood, the possibility of the nose or its sinuses being the cause of the ocular disease is dismissed, in most instances, by the surgeon, upon the negation of the patient of having suffered from nasal catarrh, or by the failure of one, or at best two, rhinological examinations to reveal the presence of pus in the nares. Ophthalmologists forget, or are unaware, that a very active sinusitis may exist without nasal discharge, either by reason of retention of the pus in the cavity of the sinus, or from the simple congestive nature of the inflammatory process, and do not seem to appreciate that a sinusitis of intense activity may be present without creating any subjective nasal sensations whatsoever."

The writer has divided the cases reported into groups, but since the presentation is incomplete, no attempt has been made to create an ocular symptomatology of this class of cases:

Group 1 comprises seven cases which illustrate that disease of the ethmoid, sphenoid and antrum cavities may be evidenced by commencing (slight) optic neuritis and interference with vision.

In Group 2 there was an involvement of the fifth nerve, causing in one case severe pain in the eye, in another the sensation of a foreign body in the eye, and in a third herpetic keratitis.

In Group 3 there was edema of the lids as a symptom of disease of the accessory sinuses, illustrated by three cases.

Group 4 presented paresis and paralysis of extraocular muscles.

In Group 5 is placed an instance of pseudo-migraine ophthalmoplegique as a result of sinusitis.

In Group 6, one of abscess of the accessory sinuses which simulated diseases of the lacrimal apparatus. C. H. M.

TWO RARE CASES OF OCULAR COMPLICATIONS IN EMPYEMA OF THE ACCESSORY SINUS.—ALEXANDER, F., Frankfurt a. M. (Transactions of the Fourteenth Congress of the German Otological Society: *Berlin. klin. Woch.*, 1905, No. 26, p. 827.)

CASE 1.—A man, aged 41, had, after influenza, an acute relapse of empyema of the left sphenoidal sinus and the right posterior ethmoidal cells with bilateral papillitis. Perfect recovery of the visual disturbances after wide endonasal opening.

CASE 2.—In the right eye of a girl, aged 13, with empyema of the left maxillary antrum and the anterior ethmoidal cells, an abscess of the vitreous formed, which was absorbed after opening the antrum and the cells. Vision rose from counting fingers at 0.5 m. to 4/10. Alexander considers this complication as a metastasis. He could find no analogue in literature. C. Z.

Exophthalmos Caused by Disease of the Ethmoidal Cells and Frontal Sinus; Drainage; Recovery.—Johnston, Richard H., Baltimore. (*Ophthalmic Record,* July, 1905.) Negro, aged 27, presented himself to Dr. Harlan's clinic with exophthalmos of left eye, and choked disc. Nasal examination revealed a purulent discharge coming from the middle meatus in small amount. Probing in the region of the frontal sinus produced a copious flow of pus, with prompt improvement of the exophthalmos. This probing was continued daily, with continued improvement. In a weeks' time the eye had returned to its normal position and with normal movements the choked disc was rapidly disappearing. The author explains the mechanism of the exophthalmos by pressure of the pus in the frontal and ethmoidal sinus causing bulging of the thin orbital walls, with consequent pushing forward of the eyeball. He assumes, had the orbit contained pus it could not have been drained by simply probing the sinuses. M. B.

The Disturbances of Vision and Development of Blindness of Nasal Origin Induced by Disease of the Posterior Accessory Sinuses.—Onodi, Professor, Buda-Pesth (*Brit. Med. Jour.,* Nov. 5, 1904). With the object of learning the opinions and experiences of various eminent ophthalmologists on the connection between the optic nerves and the phenoid and posterior ethmoid cells, the writer sent out inquiries, and gives the most important answers received. He summarizes his findings in many skulls examined, showing that the posterior ethmoidal cells frequently extend into the sphenoid wings, and that in these cases the sphenoid cavities have nothing to do with the region of the canal and optic nerve.

The following anatomic relations may exist: (1) The optic canal may be formed on both sides by the sphenoid cavities; or (2) be connected with the posterior ethmoidal cells only; or (3) it may form on one side the sphenoid and on the other the posterior ethmoid cell; (4) it may be related on one side either with the sphenoid cavity or with the posterior ethmoid cell, or with both. Thus it appears that the optic canal is in close connection just as frequently with the wedge-bone cavity as with the ethmoid cell. Furthermore, in all cases in which the optic canal is connected with the posterior ethmoid cell, the septum is always as thin as paper.

"My rhinologic standpoint in the question raised is the following: On the basis of my investigations the mechanical conception respecting the connection with the optic nerve and the conclusion drawn from it to explain visual defects must be corrected, and the causal connection of the disease of the posterior ethmoid cavity must be cleared up. At the same time defects in empyema, caries, and necroses of the sphenoid cavity, the described connection of the posterior cribriform-bone cell to the nervus opticus explain the frequent negative cases regarding sight. In those cases in which a close relationship exists between the sphenoid cavity and the optic nerve, the demonstrated varying thicknesses of the wedge-bone cavity wall of the summit of the foramen opticum may play a part in stopping the spread of the disease. In those cases where the posterior ethmoid cell forms the wall of the optic canal, the extremely fine septum may favor the propagation of disease. The fissures described in the optic canal and in the anterior side wall of the sphenoid cavity, may be the direct cause of perineuritis optica and intracranial meningeal complications. Ophthalmologests, who know best the various causes of optic neuritis and atrophy, may be able to state whether one-sided sight disturbance in disease of sphenoid cavity can be looked upon as characteristic, as Lapersonne and Mandel have done.

"From our investigations we can only give the following explanation of one-sided sight disturbance in causal connection with suppuration of the adjoining cavities. In the first place, it must be emphasized that if one-sided sight disturbance points to suppuration of the adjoining cavities, causal connection should not exclusively be attributed to the sphenoid cavity, but the posterior ethmoid cells must also be taken into account and subjected to complete examination. A close connection on both sides between the optic nerve and either the sphenoid or the ethmoid cavities is infrequent. In most instances we find either on one side the sphenoid cavity and on the other the posterior ethmoid cells in relation with the optic canal, or this relation is present only on one side with either the sphenoid or the posterior ethmoid cavity. These relationships may in the frequent one-side sight defect be taken into consideration in connection with disease of the sphenoid or ethmoid cavities." C. H. M.

SYMPATHETIC OPHTHALMIA.

Sympathetic Ophthalmia.—Snell, Simeon, Sheffield, (*Brit. Med. Jour.*, July 15, 1905), gives details of a case of this affection in which normal vision was restored in the exciting and sympathizing eye. The patient was a man aged 38, whose left eye was wounded on September 8, 1904, and when seen for the first time, 11 days later, there was a wound of the cornea extending into the ciliary region, with a prolapse of the iris. The prolapse was at once excised, and the eye healed without further trouble. On October 12 the right eye was noticed to be red, and 5 days later there was iritis, and it was then noticed as being a severe case of sympathetic ophthalmia. About a month later the pupil began to react, and the eye to whiten. Since then recovery has been perfect and vision is now 6/5 and J 1 in each eye. Snell also recorded three cases in which sympathetic ophthalmitis had come on after excision of the eyeball, and referred to one published by him in 1882, in which the disease showed itself 32 days after the excision, and 106 days after the injury. Of these four cases, one was mild and recovered, three were severe, and two of them became totally blind. P. H. F.

THE CONSTITUTIONAL ASPECT OF SYMPATHETIC OPHTHALMIA. —SCHULIN, CARL, Billings, Mont. (*Annals of Ophthalmology*, April, 1905.) A few years ago the author had two children, both of whom had sustained penetrating wounds of the globe from scissors blades. One child was a resident of the city, and his vitality was low from scrofulosis, with enlarged glands and tonsils. The other child was a resident of the mountains, was robust and healthy, with high vitality. The latter child had received no treatment for the ocular injury. There was present in the eye minus tension, with evidences of encapsulated pus in the vitreous; vision *nil*. The prognosis given was that the eye was dangerous to its fellow and should be removed. The city child was seen by the author a short time after the injury. There was a perforating wound of the cornea with prolapsed iris. The latter was excised. The wound healed, traumatic cataract of a brownish color developed. The pupil remained somewhat distorted from the anterior synechia, and the iris was discolored. There was no reflex from the fundus. Vision nil. The prognosis given in this case was favorable. Much to the surprise of the author, in a few weeks' time this child developed sympathetic ophthalmia. The child from the mountains was taken home unoperated upon, despite the advice given, and so far as the author has been able to learn has not developed sympathetic ophthalmia. These two cases caused the author much thought, and he believes he has found a solution of the puzzle in the different constitutions of the two boys. He then takes up the theory of Prof. Alex. von Poehl of St. Petersburg, that *spermin is* *the chemical principle of the vital force:* "To put it into a nutshell, spermin, according to Poehl, is a ferment promoting oxidation and thereby maintaining life under conditions and in places where it would otherwise soon be extinct. Life is extinguished by the accumulation of products of imperfect retrogressive metamorphosis of albumin. The more imperfect the metamorphosis, the more poisonous on the one side and the more colloid on the other, and consequently the less readily soluble and diffusible are the products. The effects of the oxidation, which is promoted by the spermin, are therefore not limited to diminution of the toxicity. They also produce a change in the physical nature of the compounds. The higher the oxidation the less colloid and the more crystalloid are the compounds. Here Poehl has discovered one of the most important biologic laws. Crystalloid substances, as you know, when produced inside a cell, will, by osmotic force, try to leave the cell, provided its membrane is permeable to them. In this manner, by oxidation, the cell is cleaned out in a mechanical way and a current is produced towards the lymphatic vessels by which the tissues are freed from the products of metabolism and their accumulation is prevented." The most deleterious product of imperfect retrogressive metamorphosis is lactic acid. Spermin and lactic acid are antagonistic in so far as that when spermin has the superiority the lactic acid is present in overwhelming quantity, the spermin is paralyzed in its action and is finally precipitated in the form of insoluble phosphate. The phosphoric acid is taken by the lactic acid from the phosphate of soda, which causes the alkalinity of the juices. Consequently, under the influence of spermin, the alkalinity of the juices is maintained and is restored, after being lowered, while lactic acid, if not destroyed, of course, has the opposite effect. Spermin is a bactericide, while lactic acid is not. As long as spermin is abundant the alkaline juices are protected against infection with bacteria. This constitutes immunity. Low vitality finds its expression in a decreased number and abnormal structure of the blood corpuscles. In children this is the cause, as well as the consequence, of enlarged lymphatic glands and tonsils, and is named scrofulosis. By it the power of resistance of the body against infection is lowered. Scrofulous children are more susceptible to any infectious disease than healthy ones. This also applies to sympathetic ophthalmia. The elaboration of the relationship of sympathetic ophthalmia and lowered vitality is then taken up systematically, the author basing his argument upon the theory above set forth. M. B.

TOXICOLOGY.

THE INFLUENCE OF CAFFEIN ON THE FIELD OF VISION IN QUININ AMBLYOPIA.—SCHWABE, GUSTAVE, Leipsic (Translated by M. L. Foster, New York; *Archives of Ophthal.*, July, 1905), reports a case of quinin amaurosis occurring in a woman after taking five powders of 0.25 gm. each of quinin. The final result was vision O. D. 6/6, O. S. 1/24, with a narrowing of the field of vision and hemeralopia.

The greatest concentric contraction of the visual field and the highest degree of constriction of the retinal arteries were observed regularly after drinking a cup of coffee or tea, when within an hour her field would be contracted to the fixation point. This contraction of the visual field would last about 15 minutes.

Prior to the quinin intoxication neither coffee nor tea had ever had any bad influence on the vision. The author concludes that "amaurosis, with a concentric contraction of the visual field persisting over a year, hemeralopia, and great narrowing of the retinal arteries can be caused by a dose of quinin hitherto judged to be harmless (1.25 gms.) in an apparently healthy person with a relaxed vascular system, whose power of resistance has been reduced by insufficient nourishment, and in the second place that in such a person caffein, also in small doses (0.1 gm.), can temporarily induce a further contraction of the retinal vessels and of the peripheral field, without either influencing the central vision and color perception, or causing a permanent injury to the peripheral vision in spite of frequent repetition for a year." W. R. M.

AMAUROSIS FROM FELIX MAS.—STUELP, Muelheim. (Translated by M. L. Foster, New York; *Archives of Ophth.*, May, 1905). The author considers the conclusions which have been drawn from former published cases of this form of blindness as being indefinite on account of the late stage of the disease at which the ophthalmoscopic examination is made. A detailed clinical history is given of a case in which the ophthalmoscopic examination was made twelve hours after the onset of the amaurosis. At that time the patient was in a condition of collapse. Both pupils dilated and immobile. A white reflex present similar to that seen in glioma. Fundus oculi covered with a snow-white edema. The optic disc and macula could not be seen and the retinal vessels visible only in parts. The visible portions of the arteries were thread-like and the blood columns broken. The veins were torutous and filled with dark blood.

Four weeks later the pupils were dilated, optic disc was white.

The retina was sprinkled with white, while the arteries were visible only as yellowish-white cords. There was complete amaurosis in each eye.

The author explains the amaurosis as follows:

"The poison absorbed into the blood enters the central artery of the retina. The delicate muscularis of the vessel walls reacts and assumes a condition of irritation which produces an arterial spasm. This condition is sufficient to destroy the functions of the ganglion cells of the retina and to produce the sudden initial blindness. If the toxic action and the arterial spasm passes off in this stage, the function will be restored and the amaurosis pass away. If the toxic action is increased paralysis of the muscular tissue of the vessel follows, with consequent dilatation, retardation of the blood stream and vascular stasis. The after-result is an atrophy of the optic nerve."

The author suggests that it would be desirable to find some other remedy for ankylostomiasis. W. R. M.

Papillo-Retinitis from Iodoform Poisoning.—Mohr, M., Budapest (Abridged translation by M. L. Foster; *Archives of Ophthalmology,* July, 1905), reports two cases of papillitis following the repeated injections of a 10 per cent. emulsion of iodoform in cases of coxitis and cold abscesses.

In the first case, ten weeks after the injections were commenced, the patient complained of hazy vision, which became reduced to counting fingers at half a meter. There was a papillitis present. Ten weeks later the papillæ were pale and vision O. D.=5/10, O. S.=5/7.

In the second case injections of 10 per cent. emulsion had been given for seven months when vision became hazy and a double papillitis was present. Vision in each eye was 1/60. Two months later fundus normal and vision O. D.=5/5, O. S.=5/10.

W. R. M.

TRACHOMA.

A Brief Communication on the Bacteriology of Trachoma.—Pfeiffer, R., and Kuhnt, H., Koenigsberg, i. Pr. (*Zeitschrift fuer Aug.,* xiii, p. 321), rubbed trachomatous retrotarsal folds, excised under avoidance of antiseptics, finely with sterile sand in achat mortars and made emulsions with very small quantities of physiologic salt solutions, which were filtrated through Berkefeld-Liliput filters. Six to eight retrotarsal folds yielded about 6 c.cm. of a perfectly clear and sterile (with regard to bacteria) filtrate. For each experiment they used new filters, hoping to strike at least one whose porosity might correspond to the size of the supposed ultramicroscopic micro-organisms. Ten and more drops of the filtrates were for weeks daily instilled into normal human conjunctival sacs, especially the retrotarsal folds, with negative results. During the instillations only moderate hyperemia of the conjunctiva developed, which disappeared rapidly. The authors thus conclude that the normal conjunctival sac does not become trachomatous by inoculating filtrates from trachomatous retrotarsal folds. Although the proof of negative results is not to be overrated, the assumption that most minute microbes, not perceptible microscopically, which pass bacteria-tight filters, be the morbid agents of trachoma is to be considered as very improbable.

C. Z.

IMMIGRATION—THE MEDICAL EXAMINATION OF IMMIGRANTS AND WHAT THE NATION IS DOING TO DEBAR ALIENS AFFLICTED WITH TRACHOMA.—STONER, GEORGE M., New York. (*Medical News*, June 10, 1905.) In the course of a very interesting article on this subject, the writer gives the following information regarding government exclusion of aliens from the ports of this country on account of trachoma:

"Trachoma is classified by the government as a dangerous contagious disease, and all aliens certified for this disease are excluded, and a fine of $100 is imposed for each and every alien brought to this country afflicted with such disease in whom the existence of the disease might have been detected by means of competent medical examination at the time of foreign embarkation.

"All cases of chronic trachoma have not been placed in this category, for the reason that in some cases it is difficult to say that the disease was not quiescent or apparently cured at the time of foreign embarkation, and a competent medical examiner might have been honest in his opinion that the disease was cured. Occasionally foreign medical certificates are presented to that effect, when examination of the case on arrival at Ellis Island shows the disease in active form—evidently a relapse or recrudescence of the old affection.

"Among the thousands of arriving aliens at this port all forms of inflammatory diseases of the eye are met with, from the simplest conjunctivitis to the most severe form of trachoma. The mildest cases of conjunctivitis are not detained; others, somewhat more marked, are admitted to hospital for further observation. Many of these improve rapidly, and after a few days are released from hospital. Some cases of the acute, follicular or slightly granular forms of conjunctivitis are held for a further period of observation or treatment—ten days or two weeks or longer if necessary.

"In city or local practice the diagnosis might not be of any material consequence. No particular harm would be done were the word trachoma applied to all the different forms of conjunctivitis. At Ellis Island, however, and everywhere in the Immigration Service, the diagnosis is of very great importance, for the reason that the government has defined trachoma as a dangerous contagious disease, and the law directs that all aliens thus afflicted shall be excluded from admission to the United States."

The book of instructions issued by the surgeon-general for the guidance of officers detailed for the medical examination of arriving aliens contains the following data concerning trachoma:

"The object is not only to prevent the introduction into this country of a communicable disease, but also to keep out a class of persons from whom so large a proportion of the inmates of institutions for the blind and recipients of public dispensary charity are recruited. For the purposes of this circular the term 'trachoma' is used to designate a diseased condition of the conjunctiva, characterized by a mucopurulent discharge, firm, persistent hyperplastic granulation, and exhibiting a tendency to be associated with atrophy of the conjunctiva with scar formation, roughened corneæ, adhesive bands of cicatricial tissue, entropion, pannus or even more marked evidence of inflammatory processes, not due to external traumatism. Examiners are therefore instructed to regard as trachoma any case wherein the conjunctiva presents firm, well-marked granulations which do not have a tendency to disappear when a case is placed in hygienic surroundings a few days, or does not yield rapidly to ordinary treatment, even though there be no evidence of active inflammation at the time of the examination, nor appreciable discharge, nor as yet signs of degenerative or destructive processes. Examiners are also instructed to regard as a possible case of trachoma any person who presents an active inflammatory condition of the conjunctiva, accompanied by a discharge, or a thickened infiltrated condition of the lids, and to hold such until, by treatment or otherwise, the examination may be satisfactorily concluded. Cases of acute inflammation of the conjunctiva presenting a granular appearance of the lids should be regarded as suspicious and final judgment be withheld until the case has been under observation for a period of at least two weeks..

"In view of the present state of medical science as to the etiology of trachoma, an immigrant should not be regarded as suffering with that disease whose conjunctiva presents only a granular appearance and a discharge, both of which rapidly and entirely disappear."

Last year 7,994 aliens were excluded at the seaports of the United States, including 1,560 afflicted with a loathsome or dangerous contagious disease; 787 of these were excluded at the port of New York on account of trachoma. There are not now quite so many cases of trachoma found among arriving immigrants, which may be attributed to the fact that the steamship companies themselves are making considerable effort to prevent the embarkation of would-be immigrants suffering from diseases of the eye. This is especially the case at Italian ports where medical officers of the Public Health and Marine-Hospital Service are on duty, and recommend the rejection of hundreds of applicants for passage to the United States.

C. H. M.

TUMORS.

CONTRIBUTION TO THE ONKOLOGY OF THE PALPEBRAL CONJUNCTIVA.—VON HYMMEN, H., Mainz. (From the Eye Clinic of the University of Tuebingen; *Klin. Mon. fuer Aug.*, 1905, i, p. 512.) Von Hymmen gives the anatomical descriptions of two cases, one of a submucous cavernous lymphangioma, removed from the lower lid of a woman aged 41. It was pedunculated, flattened, dark red, its apex whitish-gray, and projected between the closed lids. No swelling of glands. No relapse. The case is very rare. Von Hymmen could find only one in literature. The second case, in a woman aged 81, was also very rare: A round-celled, slightly pigmented, very vascular cystic sarcoma, starting from the submucous tissue of the tarsus, whole epibulbar sarcomata are frequent occurrences. There were five flat tumors, 3 to 4 mm. in diameter, spreading over an area of the tarsal conjunctiva of 14 mm. by 6 mm., of dark brown, red or blue color, projecting not more than 2 mm. over the surface of the conjunctiva, giving rise to hemorrhages on the slightest touch. The lower retrotarsal fold, several places of the conjunctiva of the lower lid and the lacrimal caruncle show brown pigmentation, and the lower portion of the cornea is opaque. Removal of almost the whole tarsus in cocain anesthesia. No relapse in 1½ years. C. Z.

THE PATHOLOGY OF PTERYGIUM.—JOHNSTON, RICHARD H., Baltimore. (*Ophthalmic Record,* April, 1905.) In an experience of nearly three years as pathologist to a large special hospital, the author secured one large pterygium, which allowed a thorough microscopic examination. The tissue was hardened in alcohol and the sections stained in hematoxylon and eosin. "With the low power the specimen is seen to be made up essentially of a thin epithelial layer, covering a thick mass of connective tissue. At the base of the growth there is a blood clot which evidently the section are small areas of blood probably corresponding to vessels which have been cut across with the microtome. The epithelial layer varies in thickness—at one point it sends a cone-shaped process downward into the connective tissue, and at another a thick mass, giving off processes like the fingers of a glove, can be seen. Near the epithelium in the connective tissue are small dots, evidently cells, the character of which can not be made out with the low power. With the high power the epithelium can be divided into three distinct layers. The outer layer is decidedly flat, with nuclei not distinct or wanting—the protoplasm takes the stain poorly. Passing in the cells become more or less oval in character, with round or oval nuclei. Next to the connective tissue the cells become cylindrical, with elongated, deeply-staining nuclei. The connective tissue is made up of rather loose fibers, running vertically, horizontally and obliquely. The small dots seen in this tissue with the low power can now be distinguished as small mononuclear leucocytes, showing an inflammation of the parts. Toward the base the leucocytic infiltration is not so pronounced. The blood vessels filled with red cells are better seen with the high power. No glandular or cyst formation is present in the section, as has been reported in some cases. The section presents a similarity to the sections of vernal catarrh examined by me and reported in the *Ophthalmic Record* for April, 1904." M. B.

On the Relations of Retinal Hemorrhages of the Child, Occurring During Labor, to the Pathogenesis of Glioma Retinae.—Wehrli, Esc., Frauenfeld. (*Correspondenzblatt fuer Schweizer Aerzte,* 1905, No. 2.) The origin of glioma retinæ may be attributed to persisting embryonal tissue, which by noxious influences, most frequently traumatic lacerations ond hemorrhages of the retina during labor, is stimulated to grow. The development of the tumor, when threatening in the family type, may thus be prevented by prophylactic measures. C. Z.

Cysts of the Pars Iridica Retinae, with Report of a Case. —Oatman, E. L., Brooklyn, N. Y. (*Archives of Ophthalmology*, May, 1905), reports a case occurring in a glaucomatous eye. Examination of the eye after enucleation showed a large serous cyst on the posterior surface of the iris, extending from the margin of the pupil to the ciliary body and lined with pigmented cells.

The anterior wall bulged forward into the anterior chamber, forming a partial bombe iris. Microscopic examination of sections showed that the cyst resulted from a separation of the layers of pigmented epithelium which form the retinal tract of the iris. The anterior cyst wall was formed by the atrophic iris and lined with the outer layer of these cells, while the posterior wall consisted of the inner layer of cells resting upon a fibrous membrane, which evidently resulted from the organization of old plastic exudates.

Oatman states that the development of these cysts depends upon the peculiar anatomic arrangement of the parts and, while the term cyst is a convenient one to employ for clinical purposes, their analogy to detachment of the retina is very evident, and that it is in fact a detachment of the pars iridica retinæ. W. R. M.

GLIOMA.—SNELL, (*Brit. Med. Journ.*, July 15, 1905), reported a further instance of glioma in more than one member of the same family, referring to a paper last year in which he related an instance of two members of the same family being affected. At that time only three observers had placed cases on record. The case now reported was that of a male child, aged 2¼ years; glioma was present in each eye. The only other child of the parents was a girl, born in 1897. She was similarly affected with glioma in both eyes, which proved fatal. The child whose case he had recorded last year was still alive and well. P. H. F.

CARCINOMA OF THE CHORIOID.—MARBE, Berlin. (*Deutsche Med. Woch.*, 1905, No. 27, p. 1,076.) A woman, in the forties, complained of visual disturbances in the right eye, five months after removal of an ademona of the mamma and the axillary glands. There was a bluish-gray protuberance upward and inward of the disc, with detachment of the retina. A month later she complained of the sight failing in the left eye, which showed also a tumor of light pink color, upward and inward of the disc, surrounded by pigment spots. Then metastases in the bones of the pelvis and intestines developed, to which the patient succumbed.

So far 46 cases are described. one-third of which were bilateral. As a rule the patients did not live longer than a year after the ocular metastasis was observed. C. Z.

A CASE OF GUMMATOUS GROWTH OF THE OPTIC NERVE BEHIND THE DISC AND OF GUMMATOUS CHORIOIDITIS.—STOCK. (From the eyeclinic in the University of Freiburg; *Klin. Mon. f. Aug.*, 1905, 1, p. 640.) The left eye of a woman, aged 58, became inflamed eight weeks before her admission and grew blind after six weeks. Since that time she suffered severe pain over the whole head, and vomiting. The cornea and aqueous were opaque, iris bulged, wits occlusions of pupil, preventing ophthalmic examination T.+2. Enucleation on account of pain. The optic nerve was enlarged to about double its volume and, in a transverse section, appeared lighter than normal. The sheaths were thickened by infiltration with round cells, the intervaginal space almost obliterated. The center of the swelling (4 mm. in diameter) lay 4 mm. behind the lamina cribrosa. The nerve fibers, artery and vein in this nodule were destroyed; it only contained detritus as far as to the papilla. In the retina were hemorrhages, the chorioid showed immense infiltration with round cells and was separated from the retina by a coagulated exudate 1 mm. thick. While gummatous affections of the intracranial portion of the optic nerve are not infrequent, such a necrosis in the papilla is very rare. The condition is illustrated by a lithographic plate. C. Z.

Angioma of the Chorioid.—Fehr. (From the Eye Clinic of Professor Hirschberg. *Berlin. Centralbl. f. Aug.,* 1905, p. 161). Angioma of the eyeball, viz., conjunctiva, iris and choroid, is extremely rare, that of its appendages relatively frequent. Only about 25 cases of the former are described, 10 of angioma of the chorioid. Angioma of the chorioid seems to be always congenital. Fehr reports a case which is of especial interest, as an ophthalmoscopic examination was made 20 years previously, when the patient, a farmer, aged 65, came for the first time. V. was then 15/100, visual defect from above up to 30 degrees and a large central scotoma. Five months before, the patient, who always had good sight, noticed a fog before his left eye which gradually spread. At the center of the fundus was a flat grayish-white swelling, 4 to 5 discs long horizontally, 3 vertically, 0.6 to 1.2 mm. high at different places. It was composed of white and gray nodules with partly shining surfaces. Above and below it was lined by a dark seam. Between its nasal border and disc the retina showed folds as if detached. The diagnosis was benign (fibromatous?) tumor, and the eye left alone. In the following years the tumor grew slowly. After ten years V. was very much reduced from detachment of the remained from the incision for its removal. At certain points in retina and hemorrhages in retina and vitreous, and finally was totally lost. October 10, 1904, the eye was enucleated on account of intense pain from secondary glaucoma.

The anatomic examination revealed in the temporal posterior portion a flat, disciform tumor of the chorioid, occupying three-quarters of the upper one-quarter of the lower half of the globe, 12 mm. wide, 6 mm. high and 3 mm. thick, starting near the optic disc. It was covered by a membrane which adhered by threads to the detached retina. It was an undoubtedly congenital, cavernous angioma, with formation of an osseous cap at the surface. There were also found old chorioiditis with recent foci, total detachment and degeneration of the retina, with hemorrhages and recent inflammatory foci, scleritic and episcleritic foci, cupping of the optic nerve. The ossification (according to Greeff) was due to the chronic chorioiditis. Angioma of the chorioid may be distinguished from solitary tubercles by its slow commencement, its long stationary condition, lack of inflammatory symptoms and of miliary tubercles in the surroundings. It has some features in common with sarcoma: Slow development, tumor-like condition, nodular, irregular surface, and sharp, partly pigmented borders. But the color is fundamentally different. In sarcoma the surface is brown or brownish-yellow, dotted with black and brown spots and by fragments of chorioidal vessels and foci of degeneration of the retina present a motley appearance. It is bluish or gray only when separated by exudations from the detached retina. The color of angioma of the chorioid is determined by the dense fibrous cover, which prevents translucency. The angioma therefore appears not red, but white or bluish-white. The prognosis from the observations so far made seems to be bad, but in all cases the diagnosis has been made anatomically, i. e., only in the most unfavorable cases, and it is possible that angioma may have been seen more frequently, but not diagnosed. C. Z.

TWO CASES OF MELANOSARCOMA OF THE CHORIOID.—KIPP, CHAS. J., Newark, N. J. (*Ophthalmic Record,* June, 1905.) Case 1.—F. W. W., aged 40. First seen in June, 1901. He sought relief from pain and inflammation of his right eye. Left was normal. One of the features of this case was an edema of the conjunctiva of an intermittent character, situated at the lower outer quadrant. The conjunctiva was raised in the form of a bleb by a light, yellowish fluid, and the superficial vessels were somewhat injected. Vision 6/5. Fundus normal except for an apparent detachment of retina in outer periphery. In December he had another attack of chemosis and pain, and vision was found reduced to 5/60. The retina was now opaque in the macular region. Shoals of pigment were now visible through the retina in the periphery. Tension normal. In October, 1902, he had another similar attack of pain and chemosis. No special change in fundus appearance. In February, 1903, he had another similar attack, only the chemosis was more extensive. The retina was now extensively detached. He had another attack in May. The eye was now entirely blind. The eye was enucleated. The patient had been under observation up to the present with no recurrence of growth. Examination of the eye showed a thickened nodular chorioid extending from the cilary region on the temporal side to the optic disc and above to the median line and below somewhat beyond the median line. The microscopic appearances were that of a melanosarcoma. Another point of interest is that the eye sustained a blow about three months before the suspected development of the tumor.

Case 2 is one of melanosarcoma in the region of the macula in a woman 50 years of age. First seen in February, 1904. Eye enucleated in April, 1904. No recurrence up to the present.

M. B.

Diffuse Leuco-Sarcoma of the Chorioid.—Johnston, Richard H., Baltimore. (*Ophthalmic Record,* April, 1905.) This tumor extended from the ciliary process to the optic nerve and was of the diffused, flat character. There was practically no pigment in the tumor as compared with the usual pigmented neoplasms in the eye. No spindle cells were present, but the cells were seen to be large and small, round and oval in form. Through the specimen were connective tissue fibers, which in some places were so arranged as to give the appearance of an alveolar sarcoma. At all other points the connective tissue is very scarce and the cells are packed together in a homogeneous mass. The tumor may be described as a non-pigmented, round-cell sarcoma. Such growths are rare. There are only 8 or 10 cases of the typical diffuse form on record. Though the tumor did not involve the entire chorioid, it was in form and shape a diffuse or flat sarcoma. M. B.

Microphthalmic Cyst of the Orbit.—Cruise, R. R. (*Brit. Med. Jour.,* July 15, 1905), described a case of microphthalmic cyst of the orbit. The patient, aged 24, had had a swelling in her left orbit, from birth, which had been increasing in size for the last two years. There was a small degenerated-looking microphthalmic eye pushed into the upper and outer quadrant of the left orbit. The rest was filled with a fleshy mass, which was firm and nonfluctuating. Clinically, the diagnosis was by no means easy, especially the differential diagnosis from meningocele. Pathologically, the chief peculiarity was the free communication between the eyeball and the cyst, which allowed the free passage of fluid secreted by the well-developed ciliary body to pass into the cyst, and this led to the increase in size of the cyst, for which reason the patient applied for treatment. P. H. F.

Orbital Sarcoma, with Report of a Case and a Discussion of Radical Operation, X-ray Therapy, and Electro-Chemical Sterilization.—Ring, G. Oram, Philadelphia. (*New York Medical Journal,* June 10, 1905.) The writer reports the history of a case of orbital sarcoma upon which he operated. He gives brief references to the method of treatment advocated by a number of ophthalmologists as serving to indicate the general trend of treatment. Brief expressions of opinion regarding the value of x-rays and electrical sterilization by men specially identified with these lines of work are also given.

From a study of these methods, the writer considers the following conclusions warranted:

"1. The difficulty in accurate diagnosis under certain conditions entirely justifies an exploratory excision with removal of a section of growth for microscopic study, said exploration likewise serving to determine the ramification of the tumor.

"2. The brilliant results achieved by a number of accurate observers in the field of Roentgen ray therapy justify the immediate tentative application of the method before any radical operation is attempted. If unsuccessful in removal of the growth, the virulence of the latter will probably be decreased and the dangers of metastasis lessened. (Leonard.)

"3. If the sarcoma is encapsulated, operative intervention without orbital evisceration promises a successful outcome.

"4. In view of the almost constant recurrences after orbital evisceration, the removal of the growth itself is regarded as sufficient unless the periosteum or bony wall is involved.

"5. The encouraging results reported from the cataphoric sterilization of malignant growths in other parts of the body seem to warrant the utilization of this method in the orbit, due care being exercised as to strength of current used. (Massey.)

"6. Future experience must determine whether better results will be achieved by using this method for the original growth, or reserving it for recurrence *in loco.*

"7. If operation has been performed and the growth has recurred, we have at command these two valuable methods of attack." C. H. M.

A Case of Endothelioma of the Orbit.—Rumszewicz, K. (*Post. Ok.,* 1905, Nos. 4 and 5.) The right globe of a woman, aged 28, was, from birth, slightly displaced downwards. This became more marked within the last 3 years. There was no exophthalmus. A tumor was found between eyeball and orbital roof and was extirpated. The microscopical examination revealed an endothelioma which had developed from the lympthatics. In the anterior portion is showed a glandular structure similar to the lacrimal gland, and cystoid cavities. The author attributes the displacement to congenitally heterotropic accessory lacrimal glands. The endothelioma developed in their immediate surroundings.

K. W. M., translated by C. Z.

The Morphology of Carcinoma and the Parasitic Theory.—Orth, J., Berlin. (*Berliner Medicin. Gesellschaft,* March 1, 1905; *Deutsche Med. Woch.,* 1905, No. 10, p. 390.) We here give only the conclusions of the interesting lecture:

1. The essentials of all carcinomata, primary and secondary, are the carcinoma cells; without carcinoma cells no carcinomatous metastasis.

2. For the explanation of metastasis the assumption of parasites is not required, carcinoma cells, able to grow, suffice perfectly.

3. There is no analogy between carcinomatous metastasis with metastatic suppurations, formations of tubercles or other infectious development of granulomata; therefore no analogous conclusion for a parasitic origin of carcinoma can be drawn.

4. The successful transplantations of carcinoma to another individual may be explained without the aid of a parasitic theory by the assumption of metastasis in another individual effected by the transplanted cells.

5. The parasites so far described can not be considered as sufficient base for scientific theories, or in other words: The parasitic theory of carcinoma entirely lacks any solid foundation. C. Z.

Prelacrimal Tubercular Neoplasm.—Chappe. (*Annales d'Oculistique,* March, 1905.) Chappe believes that tubercular affections are more frequent than is generally supposed, as many cases are not recognized. The case noted by him was that of a small and badly developed woman of 48 years, whose eyes had been watering for two years. Three years before she was first seen she noticed a little swelling at the corner of the left eye, and at the same time a tumor in front of the left ear. She was not inconvenienced beyond a difficulty of breathing through the nose. The tumor was allowed to increase slowly in size without interference. For several months she had suffered with headache and the swelling had progressed more rapidly. The tumor was situated in the region of the lacrimal sac, and appeared to be adherent to the superior maxillary bone. It was about the size of a hazel nut, and was rather firm. Pressure did not reduce its size or cause pus to flow from the puncta. The skin over it was red and there was a lupus nodule about the size of a pea situated at the lower part. The lacrimal passages were impermeable on both sides. There was lupus in the left nasal fossa, with a preauricular glandular tumor as large as a walnut.

There was no tuberculous inheritance or syphilitic taint; but two of the patient's children were tuberculous and one had died of mesenteric tubercle; the lungs of this patient were healthy.

When the tumor was removed it was found to be adherent to the periosteum. The lacrimal sac was not involved. The tumor consisted of cellular masses separated by connective tissue, and was composed of round epithelioid cells and numerous giant cells. No tubercle bacilli could be found. Fragments of the tumor mass were inoculated beneath the skin of the abdomen of two guinea pigs, and gave rise to small tumors in which the bacilli of Koch were found. The affection in this case, the author says, instead of following the usual path by the mucous membranes of the nasal canal, had extended along the periosteum. G. C. H.

VISION AND COLOR PERCEPTION.

VIOLET VISION.—HILBERT, RICHARD, Sensburg. (*Centralbl. f. Aug.*, 1905, p. 134.) Ianthinopia is one of the rarest of pathological color perceptions. Over 100 cases of erythropia, 19 of xanthopia, 16 of kyanopia and 15 of chloropia, but only 5 cases of violet vision have been described. Two of the latter were caused by intoxication (Haschisch and a Japanese fungus), one by otitis media, one by disseminated chorioiditis, one by locomotor ataxia.

Hilbert saw a case of violent vision in a farmer, aged 50, poorly nourished and neurasthenic, during influenza. The disease commenced with chills, bronchitis, coryza, tonsillitis, lack of appetite, profuse diarrhea, and sopor. The patient complained of violent headache, neuralgic pain in arms and legs, and asomnia. On the fourth day the headache subsided, but all objects, especially light ones, appeared violet to the patient and after closing the eyes the visual field seemed to have a violet veil. Under the use of saliprin and physical treatment this annoying symptom disappeared.

In Hilbert's opinion violet vision as well as the other subjective chromatopiæ of this category are unexceptionally due to central causes. It was peculiar that in two of the six cases the sensation of violet alternated with that of green. This, however, had been previously observed by the author as a subjective physiological sensation in the dark room, with the eyes open or closed. [Violet vision has further been observed after ingestion of santonin, which may precede yellow vision, and is perceived also when the eyes are closed. According to Lewin and Guillery, in their excellent book on the actions of drugs and poisons on the eye, II, p. 914, it can not certainly be due to a central disturbance. It is rather a peripheral process in the light perceiving and conducting parts of the visual organ. Reviewer.] C. Z.

THE PERCEPTION OF LIGHT AND GLOBE.—EDRIDGE-GREEN, F. W. (*Brit. Med. Jour.*, July 22, 1905), assumes that light liberates the visual purple from the rods "just as heat would melt an ointment," and a photograph is formed. This decomposition chemically stimulates the ends of the cones, and visual impulses are set up differing in character according to the wave-length of the light causing them; that is to say, a very similar condition exists in the impulses which are transmitted along the optic nerve to that which is accepted for waves of light previous to their entering the eye. The visual center transmits to the mind impressions of white light, and by it objects are seen more chromatically, as in a photograph. The visual center is, therefore, acted upon by impulses within the power of perceiving differences possessed by that center or portion of it. This theory consists of two distinct hypotheses—one retinal and the other cerebral.

According to this theory, the visual center was first developed, and subsequently a color-perceiving center. When there were few cells in that center it would only be able to differentiate between the largest and the smallest wave-lengths, the red and the violet; that is, the spectrum appeared nearly all gray, but with a tinge of red at one end and a tinge of violet at the other. As the color sense developed, the two colors met in the center of the spectrum. Then a third color, green, was developed, there being three points of difference seen, instead of two. Then yellow was developed at the next point of difference, midway between red and green. Next blue, and then orange appeared.

Cases of color-blindness may be divided into two classes; in one there is light, as well as color loss; in the other light-perception is normal, but there is a defect in the perception of color. In the first class color-defect may be due to one or more causes, all of which are probably peripheral, such as absorption by the media of the eye, or defect in the visual substance. In the second class the color-blindness is due to a defective development of the color-perceiving center in the brain, the imperfect development preventing the act of perception from being perfectly performed, and, therefore, similar impulses are regarded as the same. Color-blindness is, therefore, only a representative of an earlier state in the development of the color-perceiving center.

In regard to color-mixing, if we consider the impulses caused by the decomposition of the visual substance by red and violet, respectively, to be the most unlike, they will form with the central one lying between them, green, a natural trichromatic system. In past ages all, as the trichromic now do, saw the rainbow—red, green and violet. When a new color, yellow, appeared between red and green, a mixture of red and green would give rise, not to red-green, but to the colors which had replaced it, namely, yellow. The proportions of red and green required to match a yellow depend largely upon the luminosity of the colors.

That two colors when mixed will give white is reasonable, provided that these two colors represent, either directly or indirectly, all the color-sensations of the observer. When two complementary colors are mixed, the color-perceiving center is placed in a position in which it is not able to perceive any color, the colors neutralizing one another.

As an object is moved further from the center of the field of vision we become more and more color blind. This is consistent with the view that the macula, being more fully represented in the cortex, is in a higher state of development.

Successive contrast is explained by assuming that when the color-perceiving center in the brain has just been perceiving rays of a certain kind, it and the retina are directly afterward less responsive to those rays than to rays of a different degree of refrangibility, and so surrounding objects will appear to be deficient in that color.

Edridge examined the retinas of monkeys after adaptation to dark, and found the visual purple in the yellow spot, but situated between, and not in the cones. A bright light may fall upon the fovea without producing any sensation, and a perceptible interval elapses before we are able to see with the yellow spot. These facts are explained by the cones not being directly sensitive to light, and by the diffusion, into the yellow spot, of the visual purple.

P. H. F.

VISUAL FIELD.

Contribution to Bitemporal Hemianopia.—Paukstat. (From the Eye Clinic of Dr. Treitel, Koenigsberg; *Klin. Mon. f. Aug.*, 1905, I, p. 605), reports three cases. The autopsy revealed, in the first case, a man, aged 47, a large cyst on the base, extending from the anterior commissure almost to the pons, communicating with the lateral ventricles, the anterior and posterior horns of which were much enlarged (the cyst was the extended third ventricle), atrophy of the chiasm and optic nerves, which were reduced to thin threads, foci of softening in both cerebral crura and caudate nucleus; in the second case, a probable glioma, arising from the anterior surface of the chiasm and enveloping the partly atrophic optic nerves.

In the third case the diagnosis of brain tumor was made by Professor Lichtheim. In none of the cases were, besides the bitemporal hemianopia, localizing symptoms; in two polyuria, in one albuminuria. The disease lasted in one four and one-half years; in the other nine. In two the optic atrophy was found ophthalmoscopically one year after visual disturbances set in. Frequent oscillations of vision and visual fields were very marked in Case 1. They are attributed by Schnabel to toxic, by Mueller to traumatic causes, by Oppenheim to basal cerebral syphilis. Paukstat's case shows that they also occur in non-syphilitic affections and are due to temporary disturbances of conduction, which lasted three and one-half years in the second case, when vision again rose considerably. In the first case hemianopic pupillary reaction was ascertained. Paukstat found that in diminished excitability of the conducting fibers the sensation of green suffers first, then of red and blue, which, after improvement, returned in reversed order. C. Z.

VITREOUS.

An Interesting Case of Synchisis Scintillans.—Noiszewski, K. (*Post. Ok.,* 1905, No. 2.) By focal illumination of the eye of a young woman a large quantity of large glistening, almost immovable cholesterin crystals were seen in the anterior chamber, and the deeper layers of the cornea. The immobility spoke for condensation of the aqueous. The lens was opaque and the eye amaurotic. Previously detachment of the retina was ascertained. Wicherkiewicz observed a case of synchisis scintillans in a girl, aged 10, of such intensity that a gray glistening mass completely filled the anterior chamber. After evacuation by corneal section, the cholesterin crystals again formed abundantly in the anterior chamber. K. W. M., translated by C. Z.

Book Reviews.

Manual of the Diseases of the Eye.—May, Charles H., M.D. For Students and General Practitioners. Fourth Edition. Revised. With 360 Original Illustrations, Including 21 Plates, with 61 Colored Figures. William Wood & Co., New York. $2.00.

This is certainly a commendable text-book for advanced students and the general practitioner. The issuance of four editions within five years speaks for its popularity.

"A considerable number of alterations have been made. Many illustrations have been replaced by superior ones. New figures have been added, including eight additional colored plates; among the latter are six presenting twenty-nine colored drawings of external diseases of the eye. The volume has been kept up to date, but has not been increased in size, the original plan of presenting a book for the student and general practitioner having been adhered to."

It is well printed and has a full index.

H. V. Würdemann.

The Treatment of Diseases of the Eye.—Hanke, Victor, Dr., Vienna. Translated by Parsons, J. Herbert, B.S., D.Sc., F.R.C.S., London, and Coats, George, M.D., F.R.C.S., London. W. T. Keener & Co., Chicago. Hodder & Stoughton, London. $1.25 net.

This is a thoroughly boiled down compend of 222 pp. I have never seen better, although there are others which answer the purpose quite as well, such as Wood and Woodruff's, May's, Gould's, *et al.* These books, however, give too much for the purposes of the undergraduate and not enough of the subject for the practicing physician. They are of little use to the ophthalmologist except in teaching. Personally, I much prefer for the undergraduate a smaller book, like Henderson's, which only touches the high places. Hanke's book is particularly full on treatment and gives many formulæ.

H. V. Würdemann.

Ophthalmic Neuro-Myology.—Savage, G. C., M.D. A Study of the Normal and Abnormal Actions of the Ocular Muscles from the Brain Side of the Question. 39 Full-Page Plates and 12 Illustrative Figures. Published by the author, 137 Eighth Ave. N., Nashville, Tenn. Printed by Keelin-Williams Printing Co., Nashville.

Savage now gives us a full-fledged theory of ocular rotations based upon his studies for a score of years. He sets up a cleverly conceived and extremely elaborate family of eight conjugate cortical brain centers concerned in version, and three others, all of "which have no casual relationship with the heterophoric conditions nor have they any power for correcting them." "If the eyes are emmetropic-orthophoric, these centers are forever at rest." There are also "twelve basal centers," which latter "do not cause heterophoria, but stand ready to correct it." They have, according to Savage, been made by Dame Nature as a sort of muscular conscience or policeman, or as a bank account to draw upon if the eyes wander from the parallel path of orthophoria. I can not conceive of Nature doing anything in advance of requirements. She learns only by hard experience and develops from the past, and not for the future. I must admit that my conception of the binocular movements is based upon the fact that Nature has antipathy to double vision and that she has made a single fusion faculty (to which Savage also agrees) ,or a "center," as others call it, as sufficient to control this. The muscles certainly are not separate, individual units, but fasciculi of the muscular cone enveloping in the eyeball, and in no two instances are exactly alike or placed the same, any more than the imprint of a forefinger can be exactly duplicated in all the human race. The elaborate, inductive theory of Savage is an elaboration of "Maddox's conception of five centers and possibly more," and Savage explains every normal and abnormal action of the ocular muscles by his hypothesis.

I believe I express the views of the majority of ophthalmologists when I say that I do not often see the serious symptoms mentioned by Savage in this work and Ophthalmic Myology as the result of deviations from the orthophoric condition, neither do I believe that orthophoria is "normal," any more than emmetropia is common or normal. The eyes are not parallel in sleep, in narcosis, nor in death, and are held "straight" purely by the desire for single vision. If we relieve the cause of ametropia, or general ill-health, and educate the eyes to see singly by exercise, they get along well enough and cause no symptoms. I do not often recognize cyclophoria, either plus or minus, and when I have found it have never seen symptoms therefrom. I surely would not operate for a slight tilting of the meridians, as I have always seen compensation for slight deviations; the eyes get used to the condition and no symptoms arise. I operate only in older cases of squint or intractable heterophoria; in the latter where double vision is easily excited. I formerly resorted to operation and did dozens a year, but I get better results since I have learned to remove the causes of the ametropia.

Read Savage's book by all means, gaze at his diagrams, follow his reasoning. Read Stevens' new book, which may give you more of the peripheral side of "ophthalmic myology," but first of all read Worth, Browne & Stevenson on Squint, then go back to Donders, Helmholtz and Landolt.

Savage gives us some rather startling words and phrases: "Flow of neuricity," "nerve cable," "maddened tenth center." His position is fluently stated, and although not at present generally accepted, the book will be found helpful even to those who believe that the scheme of the ocular rotations is much more simple and that binocular vision is to be explained by Nature's preference for single images in the development of the binocular eye of man.

H. V. Würdemann.

Squint Occurring in Children.—Browne, Edgar A., F.R.C.S., Ed. Assisted by Stevenson, Edgar, M.D., M.Ch. Aberd. An Essay. W. T. Keener & Co., Chicago. Balliere, Tindall & Cox, London. 1904. $1.00 net.

This is an essay that should be in the hands of every general practitioner as well as specialist, for the family doctor is now the one who delays the treatment of squint by specious advice to "wait until the child is old enough for operation," i. e., until amblyopia of one eye is established, until the fusion faculty is lost, and until nothing else but an operation will do anything, and that only give cosmetic results for a few years! I have ordered several to loan to my physician friends and to help with the needed missionary work. The general practitioner must be educated to know at least that the time to begin the cure of squint is in its incipiency—at the age of 2 or 3 years—and that binocular vision is of value and that it can not usually be established after strabismus has existed for a number of years.

This little book represents the authors' teaching "for some years past." The nature of squint, arising from defects of the eye as an optical instrument, is clearly defined. The muscles are shown to be under the governance of their motor nerves, and the cause of squint to be non-development of binocular vision. The cure is that of the cause—correction of the refraction errors, development of the fusion faculty (although they do not so denominate it), and restoration of binocular vision by various orthoptic exercises. They give many methods as their own, but decry "elaborate contrivances" (p. 58), probably referring to the methods so successfully advanced by Worth, whom, however, they do not mention. They object to operation in all but otherwise intractable cases, and show that operation may only give a temporary result which leads later to the eye sliding out the other way.

The obstacles to successful orthoptic treatment are the ignorance and want of patience of the parents and the general practitioner. The time has come when we may say that no young case should be operated upon until full trial of all other means, and that for as much as several years.

The objects of treatment are: (1) To arouse and stimulate the instinct for precise vision: (2) To arouse and cultivate the desire for binocular vision; (3) To lessen accommodative effort. Savage, Stevens and Gould, who are in a sort of triangular disagreement, would not agree with the authors. "The muscles are not at fault, . . convergence is effected by the motor centers, . . the innervation of the muscles does not take place separately, . . the precise adjustment of the eyes to a definite point can only be accomplished in obedience to the requirements of the retina. The adult is intolerant of incongruous images, but children beginning to squint do not present discomfort (p. 47.)." "There is no reason why we should allow the left hand to become more awkward than need be for want of use (p. 66)." The reviewer is inclined to espouse the views of Browne and Stevenson. The after-history of a number of squints treated without operation could be advantageously multiplied, for it is only the proof of results that will bring the tenotomists and faddists to their senses, as well as educate our general practicing brethren. The book is well printed and delightful reading. H. V. WÜRDEMANN.

TRACHOMA. BOLDT, J., DR. Translated by PARSONS, J. HERBERT, D.Sc., F.R.C.S., and SNOWBALL, THOMAS, M.B., C.M. With an Introductory Chapter by COLLINS, E. TREACHER, F.R.C.S. 1904. W. T. Keener & Co., Chicago. Hodder & Stoughton, London. $1.00.

A most comprehensive description of trachoma. Its history, distribution, disease description, with several hundred references to principal articles in its literature, comprise Dr. Boldt's original book. An introductory chapter by E. Treacher Collins gives its history as viewed by English eyes in Great Britain and the provinces. The disease is denominated a filth disease, common in lower civilizations, where people are huddled together; uncommon in savagery and in desert people, for they never wash, and hence as the disease is mostly carried by common towels, bed clothes, and wash basins, the lowest forms of men escape. There, likewise, seems to be a special predilection for the disease in some races, notably the yellow and Semitic races. The recent epidemic of trachoma in our Eastern States and the danger we stand of its further importation from the inexcusable wholesale immigation of undesirable Southern European elements now taking place, renders the book most opportune and well worth reading.

Under treatment, it is noteworthy that verdigris (sulphate of copper) has been used since antiquity, so also with rubbing or scraping off the granulations. The work is largely statistical and although 19 pp. are given to treatment, details are not entered into. The various methods are described, preference being given to the mechanical forms—massage with boric powder, expression, etc. Thirty-five pp. are given to prophylaxis.

The work is of great interest and a valuable acquisition to the library of the ophthalmologist. H. V. Würdemann.

An Atlas of Human Anatomy.—Toldt, Carl, M.D., Professor of Anatomy in the University of Vienna. Assisted by Prof. Alois Dalla Rosa, M.D. For Students and Physicians. Translated from the Third German Edition and Adapted to English and American International Terminology by M. Eden Paul, M.D., Brux, M.R.C.S., L.R.C.P. Sixth Section. G., Neurology. H., the Organs of the Senses. Figures 1124 to 1505 and Index. Rebman Company, New York. Rebman Limited, London. 1904. In Cloth, per Volume, $4.75; the Six Volumes, $18.00.

This work in 6 demi 4to volumes (985 pp.) is an important addition to anatomy. It is composed entirely of beautifully made illustrations, 1,505 in all, with explanatory legends and names. The arteries are colored red and the veins blue, the balance of the illustrations being wood cuts in black and white. These illustrations are all original and evidently made from preparations. It is a monumental work and should be in the hands of every surgeon, and especially teachers. The pictures are not quite so diagrammatic as our old standby, Gray's Anatomy, but are very distinct and are more complete. The sixth section, "Neurology and the Organs of the Senses," is of particular interest to the ophthalmologist. An apendix to each part, that of the sixth section comprising 29 additional pages of text, fully elucidates the recent advances in anatomy of the parts described, and the index at the end of each volume (26 pp. to Sec. 6) is complete.

The printing and binding are very good and the work is most highly commended to our eaders. H. V. Würdemann.

The Doctor's Red Lamp.—Moulton, Charles Wells, General Editor. A Book of Short Stories Concerning the Doctor's Daily Life. The Saalfield Publishing Co., Akron, Ohio. 1904.

This is a most welcome addition to the general library of the physician, beautifully printed and bound, and one which all and any of us will enjoy when our day's work is done and we want to read something not purely medical but which yet has to do with the lives of medical men. Among the twenty-one short stories presented we will recognize and re-read with the greatest pleasure Ian Maclaren's "A Doctor of the Old School," with its Dr. MacLure and his environment of Drumtochty; "Dr. Santos," by Morales, and the several sketches by Conan Doyle, Margaret Sutton Briscoe, and Henry Seton Merriman.

The whole Recreation Series is well worth having and is heartily recommended for the physician's fireside reading.

H. V. WÜRDEMANN.

The Ophthalmic Year-Book for 1905.—JACKSON, EDWARD, A.M., M.D., Denver, and DE SCHWEINITZ, GEO. E., A.M., M.D., Philadelphia. Illustrated. Published by The Herrick Book Co., Denver, Colo.

This is the second volume of the Ophthalmic Year Book, and is, as its name implies, a digest of the most important ophthalmic literature of the year, together with an alphabetically arranged index, under the author's name, of the books, monographs, and important journal articles published during the year.

The volume is intended essentially to meet the need of the specialist, and enables him to review in a satisfactory manner the immense amount of ophthalmic literature which appears yearly in our general and special journals, and one has only to glance through the above volume, with its index of monographs, to appreciate the vast amount of ophthalmic literature which appears yearly and to appreciate the value of such a digest as a time saver to the busy specialist.

Dr. Geo. E. de Schweinitz contributes the articles on Diseases of the Conjunctiva, Cornea, Sclera, The Pupil and Uveal Tract, Toxic Amblyopias, Glaucoma, Tumors, Injuries, Sympathetic Diseases and Operations. Dr. Jackson contributes the articles on Eye Strain, Refraction, Ocular Movements, Diseases of the Retina, Optic Nerve, Tractc and Centers, Crystalline Lens, Vitreous, Lacrimal Apparatus, Lids, Orbit, Adjoining Sinuses, and General Ophthalmology.

WILLIAM R. MURRAY.

On the Relations of the Visual Organ to Juvenile Feeble-Mindedness.—GELPKE, TH., Carlsruhe. Sammlung zwangloser Abhandlungen aus dem Gebiete der Augenheilkunde von Vossius. Vol. VI. No. 1. Halle a S. Carl Marhold. 1904. M. 0.80 ($0.20).

Since literature gives very little information on the subject, Gelpke examined the eyes of 578 psychically inferior children, and describes his observations. He divides them in three classes: weakly talented, feeble-minded and idiots. The eyes were defective in 72.5 per cent, of which 83 per cent. belonged to the first class, 56 per cent. to the second and only 43 per cent. to the third. The eyes with defective vision were in inverted ratio to the degree of feeble-mindedness. Myopia decreased proportionately with the decrease of intelligence, so that the author asserts: The more intelligence the more near work, the more near work the more myopia, and vice versa. Myopia was found in 11.7 per cent., hypermetropia in 31.8 per cent., astigmatism in 30 per cent. Of other anomalies, acute and chronic inflammations, scars of the cornea, strabismus and malformations were ascertained. The number of congenital anomalies was greatest in the idiots. The color sense was normal in 44.5 per cent. of the first class, in 60.8 per cent. of the second. The feeble-mindedness was chiefly due to unfavorable hereditary influences of the parents (mental and nervous diseases, alcoholism, syphilis). Gelpke emphasizes that a predisposition to feeble-mindedness, congenital or acquired by severe diseases, may certainly become manifest or be aggravated by the various defects of the visual organ. He compares the defective visual organ to an ill-adjusted objective of a photographic camera, imparting to the retina and the brain indistinct images, by which the child is handicaped in its mental development. Two hundred and ninety-four of the eyes of the weakly-talented children could be improved, so that only 16 per cent. remained with impaired vision. The author shows how much good can be achieved by careful examinations of the eyes of children and proper correction and treatment. It is a very interesting and instructive essay.

C. ZIMMERMANN.

The Ophthalmology of the General Practitioner.—SALZER, FRITZ, Privat Docent, Muenchen. "Die Augenheilkunde des praktischen Arztes." Muenchen, 1905. J. F. Lehmann. 0.80 M. ($0.20).

Salzer gives a very good review of ophthalmological facts, most important for the general practitioner, i. e., some methods of examination and a certain number of critical cases. Of the first, ophthalmoscopy is excluded, but the usefulness of oblique illumination in recognizing affections of the cornea, anterior chamber and pupil (iritis and glaucoma) strongly emphasized. Of the second, the treatment of blenorrhea neonatorum, scrofulous affections, diphtheria, the diagnosis of glioma retinæ, the modern views on full correction of myopia, the diagnosis of iritis, hypopion keratitis, and the dangers of injuries, and sympathetic ophthalmia are discussed.

C. ZIMMERMANN.

Ophthalmoscopic Guide.—SALZER, FRITZ, Privat-Docent, Muenchen. "Leitfaden zum Augenspiegelkurs." 107 pp. Muenchen, 1905. J. F. Lehmann. Cloth. 5 M. $1.25.

This little book is intended to impart to the beginner the necessary elementary instruction in ophthalmoscopy. Especially those facts are as briefly as possible given, which are most important for useful handling of the ophthalmoscope, while the diseases recognized by this method are not considered, instead of which references are made to the ophthalmic atlas of Haab. After anatomical and optical (without mathematics) preliminary remarks, the eye and its refraction, the phenomena which we observe without the ophthalmoscope, construction and employment of the ophthalmoscope, erect and inverted images, skiascopy, in the course of a systematic eye examination, the ophthalmoscopic picture of the fundus, the opacity of the refracting media and a brief review of diseases of the fundus, are discussed. A very instructive phantom illustrates in a most simple manner the recognition and localization of opacities of the refracting media by parallaxis. Besides numerous wood cuts in the text, there are a number of colored plates of the fundus in different conditions, some of them representing the three tunics, are adjustable and are very serviceable in ophthalmoscopic courses. The author accomplished his task very well, and the handsomely gotten up work has our hearty approval.

C. ZIMMERMANN.

On Kroenleins Operation.—HELBRON, JOSEPH, Privat-Docent, and First Assistant at the Eye Clinic in the University of Berlin. 88 pp. with Two Plates. Berlin, 1905. S. Karger. 3.50 M. ($0.90).

In this very welcome monograph the author collected and critically utilized all observations so far published, including his own, for formulating distinct indications for Kroenlein's operation, viz., the temporary osteoplastic resection of the external wall of the orbit for the operation of intraorbital and retrobulbar diseases with preservation of the eyeball.

First, the various modifications of Lagrange, Cahen, Franke, Moure, Jonnesco, Parinaud et Roche, Wolnizew, Torek, Czermak, Becker, Rollet, Grangolphe, are discussed, none of which shows any essential improvement on the original method of Kroenlein, since they are partly too serious, at least for the ophthalmologist, partly applicable for orbital foci of a certain position.

With the 44 cases, collected and published by Domela, Helbron reports on 120, all together, 11 of which came under his own observation and, with 3 of von Bergmann and 1 of Wolff, have not been previously published. The clinical histories are given in detail and are arranged according to diseases. The chief space is occupied by orbital tumors, for which Kroenlein originally devised his method. They are considered under the following headings: Cysts, Cavernous Angioma, Tumors of the Lacrimal Gland, Orbital Tumors (Sarcoma, Angiofibroma, Psammoma, Fibrosarcoma, Melanosarcoma), Tumors of the Optic Nerve, Injuries with Foreign Bodies in the Orbit, Inflammations, Disturbances of Circulation (pulsating exophthalmus), Diseases of the Orbital Walls (tuberculosis), Affections of the Eyeball (extirpation of the ciliary ganglion in glaucoma), diagnostic operations (all four with negative findings).

The conclusions reached with regard to lasting results are summed up at the end. One of them is that the operation of Kroenlein is an easy procedure, without danger, which allows of preservation of the eyeball, generally also of the ocular muscles.

Helbron presents a very conscientious and exhaustive work, which will be indispensable for any one who is called upon to perform Kroenlein's operation. C. ZIMMERMANN.

Introduction to Medical Optics.—GLEICHEN, A., Privat-Docent, Berlin. 276 pp., with 102 Figures in the Text. Leipzig, 1904. Wilhelm Engelmann. M. 7. ($1.75).

The object of this book is to methodically present the principles of geometric optics in their bearings on ophthalmology. The reader is supposed to be familiar with the elements of geometry and algebra, which in the progress of reading the book will elicit a certain amount of his mathematical reminiscences and enable him to understand the later, more complicated mathematical demonstrations. After an elementary mathematical introduction, the following subjects are discussed: The nature and qualities of light, refraction and reflexion of light on spheres, theory of thin lenses, refraction of light in a central system, the optic system of the emmetropic eye, accommodaion of emmetropic and ametropic eyes and its influence on vision, correction of ametropia, errors caused in the eye by dispersion and inflexion, perception of color and light, astigmatism, spectacles, vision with two eyes, determination of refraction, skiascopy, magnifying lenses, microscope and cystoscope, chemical and biological actions of light and cathode, Roentgen and Becquerel rays. The author, being a teacher of geometrical optics, some subjects are presented in a manner differing from that more familiar to ophthalmologists, which, however, will be of interest on that account. Since so far we had nothing of a similar scope, Gleichen's work will be very welcome and will considerably aid the reader in understanding the dioptrics of the eye and optical apparatus. C. ZIMMERMANN.

Text-Book of Ophthalmology.—FUCHS, ERNST, PROF., Director of the Eye Clinic in the University of Wien. Lehrbuch der Augenheilkunde. Tenth, Enlarged and Improved, Edition. Wien, 1905. Franz Deutike. M. 14 ($3.50).

To say anything further in praise of the famous text-book of Fuchs, of which the tenth edition has just appeared, would mean to carry owls to Athens. Within the 15 years elapsed since its first publication it has, in quick succession, reappeared in constantly revised and improved editions, ten in all, and from the start has become a favorite among students, general practitioners and specialists all over the world, being also translated into different languages. The tenth edition has been amplified, compared e. g. with the third edition, by over 100 pages, by additional notes, the number of illustrations has grown to 347, old ones have been replaced by better new ones, and the text has been remodeled in accordance with the progress of ophthalmology, thus making it a splendid and entirely modern work. We could fill pages to indicate only the subjects where these improvements are most striking, but we refrain, and, for better illustration of this fact, we quote the author's own words from the preface: "Nothing shows me more the progress of our science than when I am turning over the leaves of the first edition. I find there opinions which I at that time entertained with my colleagues and which now seem to me to date back half a century. I would scarcely admit that I ever had possessed them if the book did not lie before me as a witness."

As it is very desirable for every one, even versed in his own specialty, every now and then to read the latest text-book for the sake of repetition, the mother of all studies, we do not know of anything better than to enjoy the pleasure of taking up such an admirable work as that of Fuchs, imparting modern ophthalmology in a most attractive and fascinating form. Although Fuchs' book has been rendered into English, the latest edition is not translated, and seems to be especially adapted for those of our confrères who intend to visit the clinics abroad. By resorting to this modern original they will be materially benefited, not only in their scientific preparation, but also in completing their knowledge of German, and thus be enabled to derive greater advantages from their studies.

Paper, print and illustrations are excellent.

C. Zimmermann.

The Surgical Treatment of Disturbances of Motility of the Eyes.—Landolt, E., Paris. Graefe-Saemisch, Handbuch des gesamten Augenheilkunde. Second, entirely New, Edition. No. 91. Leipzig, 1905. Wilhelm Engelmann. Subscription M. 2 ($0.50).

This is a part of the chapter, "Operations on the Eye," of the great handbook of Graefe-Saemisch, commenced by Snellen and to be continued by Axenfeld. Landolt, who has worked up this field with essential predilection and success, emphasizes as the chief preliminary consideration in operations on the ocular muscles that they aim at favorably influencing functional, not anatomical, disturbances. He then discusses the effect of tenotomy and its shortcomings, giving preference in most cases to advancement. His method of advancement, which is very simple and effective, is described in detail, and his assertions corroborated by illustrative cases. In an appendix Landolt describes a simple method of enucleation devised by him. Landolt's excellent and clear exposé of this important subject is highly to be recommended.

C. ZIMMERMANN.

Pathology and Therapy of the Lens System.—HESS, C., PROF., Wuerzburg. Graefe-Saemisch, Handbuch der gesamten Augenheilkunde. Second, Entirely New, Edition. Nos. 92 to 96. Leipzig, Wilhelm Engelmann, 1905. Subscription 10 M. ($2.50).

In the introduction on the anatomy of the normal lens, the various groups of lenticular fibers are described, according to the recent investigations of Rabl. Chemical and embryological researches proved that the lens capsule is a product of the lens epithelium.

According to the author's experiments, the anterior Purkinje's image, which he called anterior cortical image, is formed by the capsule, epithelium and fibers of the lens. After the twenty-fifth year a second anterior image is noticeable, which Hess termed the anterior nuclear image, as it reflected from the anterior surface of the nucleus. It is nearer to the plane of the pupil than the former. Likewise, the posterior Purkinje's image is composed of two, a diffuse posterior nuclear, and a smaller, more luminous, posterior cortical image.

The most important physiological changes of the lens concern its size, consistence and color. The latter is in man and monkeys (differing from most animals) always markedly yellowish. Hess sees in the embryonic vascularization of the anterior capsule a support of the view that the nutritive material enters the lens through the anterior capsule.

Cataract in a wider sense embraces also anomalies of the lens with visual impairment but without the usual cataractous opacities. They are considered under three groups: 1. Cataracta nigra, which is better called cataracta brunescens. 2. Formation of fissures or globular cavities, filled with clear liquid, causing irregular refraction. 3. The so-called lens with double focus, also described as spurious lenticonus, central lenticular myopia, spurious cataract.

For a thorough examination of the lens, Hess recommends mydriasis, the binocular microscope of Czapski, which magnifies from 41 to 63 diameters and secures steroscopic vision, and his osmium incandescent lamp, with a film of only 3 mm.

Hess mentions that the myopia acquired at old age (second sight), is partly due to nuclear sclerosis and has perhaps nothing to do with cataract. In presenting his microscopical investigations of the various forms of senile cataract, Hess calls attention to the changes the lens may undergo in the conservation fluids and presents, among the many pictures illustrating the conditions of the epithelium, also such which occur in perfectly normal lenses, but have been mistaken by others for pathological.

He distinguishes three marked anatomical types of senile cataract, which may also be encountered simultaneously. The most frequent form is characterized by extensive degenerative processes, especially of the subcapsular epithelium, subcapsular cortex and nucleus may be almost normal, and the opacity is caused by cavities between the almost normal supranuclear fibers, filled with a mass which may be intensely stained by hematoxylin. In the third form, the intranuclear cataract, the cortex may not be altered.

In discussing the theories on the etiology of senile cataract, Hess shows that changes in weight of the lens can not be utilized for an explanation by shrinkage of the nucleus, since transparent juvenile lenses presented individual differences in weight of no less amount than at higher ages. The author's investigations on a large material, regarding the etiological influence of hypermetropia and astigmatism on the development of cataract, as maintained by Schoen, yielded negative results. He could, however, verify in no small percentage the view of H. Knapp, that the formation of cataract seemed to be in connection with opacities of the vitreous more frequently than generally supposed. In the author's opinion the surmise that disturbances of the whole organism in the etiology of senile cataract is much more acceptable than a mechanical explanation from local causes, especially by pathological shrinkage of the nucleus, which lacks all proof. The anatomical and clinical features of subcapsular cataract seem to him to warrant the assumption of necrosis of the epithelial cells of the anterior capsule from noxious substances entering the lens from without, entailing subsequent opacities of the cortical fibers. This was for Roemer the incentive to study the supposed noxious substances experimentally by the methods of immunization, and his theory, formulated from his results, is given in extenso.

In the chapter on congenital cataracts, Hess points out, by their common anatomical characteristics, the genetic connection of the various forms, differing clinically, as the majority of zonular cataract, central cataract, a number of congenital total cataracts, fusiform cataract, and a number of cases of anterior and posterior polar cataracts. They are best explained by an observation of Hess on the embryonic lens of the chick, viz., by disturbances in the separation of the lenticular vesicle from the ectoderm, in consequence of which the lens fibers, not checked by the surrounding capsule, commenced to exuberate and then degenerated.

Of the other forms, the traumatic, glass blower, diabetic and experimental (naphthalin, lightning, massage, ligature of the ciliary vessels [Wagemann] and vortex veins [Koster], cold, light, salt solution) cataracts are minutely dealt with. Hess endorses the opinion of Deutschmann, who sees the cause of diabetic cataract in primary necrosis of the lens epithelium, analogously to that of the kidney epithelium. The process is very similar to that observed by Hess in naphthalin cataract. The latter, as well as the other forms of experimental cataract, present as a common feature in the first stages necrosis of the epithelia of the lens, soon followed by processes of regeneration. Clear clefts and lacunæ develop probably between the radial fibers, with opacities and degeneration of lens fibers. The alterations start at the equator when the poisons act through circulation, being nearest to the ciliary processes, at the pupil when they act from the anterior chamber.

After a chapter on the anomalies of form and position of the lens, follow the therapeutics of the lens system, wound healing and its complications, secondary cataract, and a bibliography of 45 pages.

Hess's book is written with the enthusiasm of an explorer, and will be read with enthusiasm. The style is wonderfully clear and vivid and therefore most fascinating. The author treats the whole subject in a more inductive than dogmatic way and, by constantly pointing out the problems still to be solved and occasional hints of how they might be solved, keeps the interest of the reader alert. Almost every part of the field has been enriched by the author's own investigations and most exact methods, which give the book its charm of originality and make his criticisms of the works of others most valuable. C. ZIMMERMANN.

History of the Ophthalmology of the Arabs.—HIRSCHBERG, J., Berlin. History of Ophthalmology, Book II, Part 1. Graefe-Saemisch, Handbuch der gesamten Augenheilkunde. Second, Entirely New, Edition. Nos. 97 to 99. Leipzig, Wilhelm Engelmann, 1905. M. 6 ($1.50).

The remarkable literary activity of Hirschberg in medical history is attested by his publications, in the last few years, of four Arabian books, translated and commented upon in connection with Prof. J. Lippert and Dr. E. Mittwoch of Berlin, as precursors to this history of ophthalmology of the Arabs, which is dedicated to the meeting of the Ophthalmological Section of the American Medical Association at Portland, Oregon. Since the originals were not printed, but consist of Arabian, Persian and Hebrew manuscripts, they had to be collected from the libraries of different parts of the world, and be translated. Quite a number of books of Arabian physicians had been rendered into barbarian Latin in the twelfth and thirteenth centuries, which, however, are without any value, and only those were consulted by Hirschberg of which the Arabian originals had been lost. So far, no satisfactory history of the ophthalmology of the Arabs has been published, so that Hirschberg's book is practically the first work on the subject, based on the Arabian originals.

The Arabian ophthalmology, as well as medicine in general, is founded on that of the Greeks, but, while the latter had produced only five text-books of ophthalmology within 800 years, from Herophilus to Alexander of Tralles, the Arabs wrote 30 text-books within 500 years, from 870 to 1370. Thirteen of these are preserved, the best by Ali B. Isa and Ammar, and the most learned by Salah Addin and Halifa. The first learned book was "The Ten Books on the Eye," by Hunain. As other sources, Hirschberg mentions monographs and ophthalmological chapters of Arabian handbooks of medicine in general. The chief contents of all these are given in more or less detail.

The Arabian anatomy of the eye was derived from the Greek of Galenos. Here, however, four important facts must be emphasized: 1. The Arabian manuscripts contain the oldest anatomical illustrations of the eye, of the chiasm and the brain. 2. Our anatomical nomenclature of parts of the eye come from the medieval Latin translations of the Arabian text-books. 3. The contraction of the pupil to light was first described in the anatomy of the eye by Razi. 4. Sadili's text-book of ophthalmology gives the first attempt of comparative anatomy and physiology of the eyes of animals and racial differences of human eyes.

Optics and the theory of vision were quite advanced, as manifested by the chief book of Ibn al Haitan of Basra (965-1038), the opticæ thesaurus Alhazeni, in which the false doctrine of the Greeks, that vision be effected by rays emanating from the eye, is defeated. It says e. g. that distinct vision is only possible if only one point of the visual organ corresponds to each point of the object.

The pathology and therapeutics of eye diseases were apparently acquired from the Greeks. New are the descriptions of pannus and its cure by peridectomy. Glaucoma was known, but increase of tension scarcely mentioned. Their pharmacopeia was similar to that of the Greeks, but also contained remedies unknown to them.

In operative skill the Arabs surpassed the Europeans, even of the few following centuries. The text-book of ophthalmology of Halifa (1,266) contains 36 pictures of instruments for eye operations, reproduced by Hirschberg; the most important were the cataract needles. The cataract operation consisted in reclination and suction, which are described in detail, followed by six interesting clinical histories.

After a chapter on ophthalmological ethics, Hirschberg says, in conclusion, that the name of the Arabs is not only written in indelible letters on the starred heavens, but also on the monuments of ophthalmological science and art, from which it never will disappear. C. ZIMMERMANN.

THE TREATMENT OF EXOPHTHALMIC GOITER WITH THE BLOOD OF THYROIDECTOMIZED GOATS.

(*Milwaukee Med. Jour.*, April, 1905.)

In 1894 Lantz treated two exophthalmic-goiter patients with milk from thyroidectomized goats. The results were so favorable that the treatment was applied to four other patients, all of whom as a consequence showed marked improvement and gain in weight.

In 1894 Drs. Ballet and Enriquez took the blood of thyroidectomized dogs that had lived long enough to experience the blood changes which loss of thyroid function is sure to entail, and injected that blood into patients suffering from exophthalmic goiter. The results were so encouraging that other practitioners soon adopted the method, or a modification of it. The *Deutsche medicinische Wochenschrift*, No. 38, 1899, contained a report of three cases of exophthalmic goiter, in the practice of Dr. Burghart, that improved under the treatment, two of them decidedly. Dr. Burghart did not confine himself to the use of injections, but administered a dried alcoholic extract of the blood.

Later, a Darmstadt chemical house prepared a serum from the blood of thyroidectomized sheep which, administered to patients who had exophthalmic goiter, produced a good effect; it was given both per os and subcutaneously.

A patient of Schulte's (*Munch, med. Woch.*, No. 20, 1902) in whom the symptoms of exophthalmic goiter had been in evidence for four years, with pronounced psychic disturbance at times, is said to have been completely cured in two months by the use of gradually increasing doses of the serum (from the blood of thyroidectomized sheep).

In 1901 Möbius (*Munch. med. Woch.,* Jan. 27, 1903) proposed the preparation of a serum from the blood of sheep, from which the thyroid gland had been removed, to be used in the treatment of exophthalmic goiter. He first injected 1 gram of serum subcutaneously, but subsequently found that better results could be obtained by giving it internally. In his patients, all of whom had been treated for years with various remedies, the circumference of the neck was reduced, the goiter became smaller, and the patients slept better and were less agitated. It is not presumed that a cure can be established by this mode of treatment, but there seems to be sufficient ground to hope for beneficial results.

Messrs. Parke, Davis & Co. have prepared a dried product of the blood of thyroidectomized animals, called "Thyreoidectin," which appears to produce the effects observed by Lantz, Möbius, *et al.* In most of the cases in which it was tested the patients experienced much relief from restlessness, tremor, insomnia and the usual train of nervous symptoms so generally observed. A gradual reduction of the pulse rate and in the size of the gland was also noted.

H. V. W.

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OPHTHALMOLOGY

ESSAYS, ABSTRACTS AND REVIEWS.

VOL. 2. JANUARY, 1905. NO. 2.

Original Articles.

HISTORY OF THE OCULAR TREATMENT OF MIGRAINE AND HEADACHES.

BY OSCAR WILKINSON, A.M., M.D.

WASHINGTON.

Migraine (megrim, hemicrania, sick headache), that opprobrium of medicine for ages, is one of the most confusing and meaningless terms in modern medicine. George M. Gould[1] says: "The word migraine is the vulgarization of a misnaming and meaningless term for a malobserved and trivial symptom—which in the majority of cases is not present—of a widely prevalent and ingravescent disease, with indescribable symptoms, which wrecks life and morbidizes the mind, the etiology and pathology of which is unknown, and of which no treatment avails." Cutler[2] says: "It is a thankless task to attempt to define migraine. On one side the clinical picture overlaps what has been called sensory epilepsy, and on the other it merges insensibly into the many forms of sick headache or pseudomigraine." There are as many different definitions of migraine as there have been different attempts to define it. In the eyes of the neurologist migraine is inseparable from a "neuropathic constitution, of which it may be the only manifestation." The general practitioner would probably refer it to the stomach, as did Serapion and Trallianus centuries ago. The gynecologist would refer it to the pelvic organs, and the oculist locates it in the eye.

Gould[3] says in his most excellent article on migraine: "Charles Lepois, 1618, taught that migraine was caused by fermentation of the biliary matter which distended the membranes of the brain. . . . Wepfer ascribed the disease to stagnation of the exudated blood serum in one-half of the head. Theories as metaphysical ruled the minds of Hoffman, Willis, Fordyce and others, who credited the disease to animal spirits. Tissot, in 1813, returned to the gastric theory. Devilliers and Descamps attribute it to disease of the frontal sinus. No one could for long get far away from the ocular idea or location. Schonlein called the disease cephalic hysteria; its seat in the nerves of the forehead and temple. Romberg called it cerebral neuralgia. Chaussier and Pinel charged the disease to neuritis of the seventh and especially the fifth nerve. Professor Brouillard thought that the third nerve was the sinner. Auzias-Turenne thought compression of the trigeminus in the cavernous sinus was the cause. Calmiel said that sick headache was a double lesion—the flow of blood to the central and to the peripheral system. Piorry held it to be due to an ascending neuralgia, starting from the nerves of the iris and pathologically reflected from the sensitive centers to other organs. Charcot insisted on intimate relation with rheumatism, gout, hemorrhoids and gravel."

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[1] Jour. A. M. A., Jan., 16, 1904.
[2] Med. News, July 30, 1904.
[3] Loc. Cit.

The confusion that reigned in the minds of the writers of medicine in regard to the classification of the various forms of headache can readily be seen by observing the manful struggle made by some of the most scientific medical men in the medical dictionaries and encyclopedias. Sauvage's classification of headaches into "ocular, dental, sinus, coryzal, hemorrhoidal, hysterical, purulent, insectal, nephraglia and lunatic" is especially significant in that he gives so prominent a place to the ocular form. Parr, in his great medical dictionary, 1809, avoids the word migraine in his classifications, and gives instead varying degrees of cephalalgia. Foster, in his encyclopedic dictionary, gives sick headache as an equivalent and synonym. Copeland, in his medical dictionary, avoids the term migraine; he uses the good, old, common-sense word "headache" and gives a fairly good classification of same, but does not mention ocular headache. He speaks of Sauvage's classification as "extensive yet indefinite." Quain, in his modern Dictionary of Medicine, under the title headache, gives "nervous or sick headache, hemicrania, megrim." Under megrim he mentions that defects of the eyesight might be a cause of headache, but when he comes to treatment he does not mention the correction of the ametropia as a means of relief.

When we have reviewed these classifications and definitions we are ready to admit that we have "confusion worse confounded." The whole trouble with the thousands that have endeavored to classify the various forms of headache is that they have been ignorant of their causes. They have mistaken the last symptom, i. e. nausea and vomiting, for the disease itself. They overlooked the fact that the eye was the first organ to suffer and the one that always suffered; that it was an overworked eye, and not the stomach, that brought about these symptoms, and thus they failed for thousands of years to locate the trouble.

Seeing the confusion into which these definitions and classifications lead, I feel that we are justified in dropping the word migraine and adopting a new classification of headaches, avoiding entirely the meaningless term. The word does not convey the same idea to any two doctors or to any set or class of doctors, and certainly the laity cover a multitude of sins under that term. Whatever the cause of the migrainic headaches may be, the practical experience of the oculist has convinced both himself and his patients that the majority of these sufferers can obtain relief by having their ametropia corrected.

Almost all of the earlier writers on the subject of sick headache noted the significant fact that it nearly always began in childhood and that it ceased of its own accord after middle life. This was mentioned by Heberden, who made the following interesting and consoling remarks in his Commentaries, 1803, page 96, under the subject of migraine: "I have observed in numberless instances that they almost always become milder and generally vanish toward the decline of life; for it is some consolation for a man to know that, if he can not cure his distemper, he will, however, have a good chance to outlive it. . . . This is true likewise of that headache mentioned among the diseases of the eyes, which begins with a mist before the sight." It is evident from his last remarks that he was familiar with the clinical picture of ocular headaches. That he could offer no relief is not surprising, when we consider that he knew nothing of the mechanism of the accommodation at that time. Liveing says: "Most of the writers on migraine and sick headaches have observed how frequently the malady makes its first appearance in children and how seldom it commences after the age of 30." He made these observations as thousands of others had done before him, yet he, in this modern age, leads us into worse confusion, instead of looking to the source where the symptoms would naturally lead him.

THE EYE AND HEADACHES.

Gould[4] says: "For several thousand years the observation has been unconsciously persisted in that the cephalalgia is not a headpain, but an eye-pain. Few or none in any definite way noticed that it was produced by near use of the eye, and none that the various extension to other parts and organs, the intensifications of the pain, and the masking under a hundred other protean disguises, were also products of continued and increased eye strain. But there was never any failure of the necessity to notice the implication of the ocular factor. The most noteworthy after the eye pain was, of course, scintillating scotoma." Sauvage was probably first to call attention to ocular headache. Earlier writers had noted that the eyes were affected, but we think that we are justified in claiming for him the honor of first giving to that important organ an etiological significance in the production of chronic headaches. Heberden, 1803, speaks of ocular headaches in connection with overwork with the eyes. These observers not being familiar with the anatomy of the eye, being strangers to accommodation, ametropia, and muscular insufficiencies were necessarily handicapped from further progress. Their works were not in vain; they took steps in the right direction, and we see, in 1831, the ingenious Piorry taking it up where these men left it, and drawing for us most beautiful living pictures of these sufferers as we see them to this day. He says in his *Opuscules,* in his article on migraine:

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[4] Loc. Cit.

"One observes migraine, neuralgic iralgia or ophthalmia, the monophthalmalgia, if one wishes to admit that last denomination, which, such barbarity as it is, expresses well my idea of those individuals of whom the sight is feeble, whom a bright light blurs easily, who sleep in obscure apartments; in those who read and write much, in those workers leading a sedentary life, fixing a long time on bodies poorly lighted or of small volume. Those men of letters, those employes, those workers with the needle, shop girls who have much writing to do, those typesetters, are especially exposed to that painful affection. One encounters it very rarely in those who are accustomed to the action of a bright light, those who work little with the eyes, and who lead an active life." He here reports some cases, in point, of persons who used their eyes for reading and other near work. The histories of two young ladies are given who always had headaches after reading much at night. Also a case of a professor who made a habit of reading his notes, which were written in a very small hand, which always gave him a headache.

Piorry's idea was that the pain originated in the iris from overwork with the eyes, or the use of them on small objects with bad light. He says in his article on migraine: "The affection which I have studied seems to be a neurosis of the iris, which, at first, originates at that membrane, or rather in its nerves, extending itself to the numerous ramifications of the nerves, and is characterized by trouble in the vision, followed by pain in the eye or at the surface of the cranium, nausea and vomiting."

His "Iralgia" was a credit to anything that had preceded him.

He was, at least, dealing with the right organ if his limited knowledge of the accommodation did prevent him from securing for the world the proper solution of a most difficult and intricate problem. To him we are also indebted for the first therapeutic means that, when applied to the eye, brought any relief. He made the discovery that, if the extract of belladonna was rubbed on the lids of these cases, they would be relieved. He has the following interesting and historical remarks to make in regard to that remedy in his *Opuscules:* "It is likewise in the beginning of these attacks that the rubbing of the extract of belladonna succeeds the best, which my colleague and friend, M. Dr. Trousseau used, of his own accord, in the same disease, during the same time I was making use of mine. This physician has communicated to me a manuscriptal note where he kindly accords me the priority. But I owe it to the truth, however, to say that his researches on the efficacy of this remedy were taking place at the same time as my own. M. Trousseau has succeeded in a sufficient number of cases, in making migraine promptly disappear, by rubbing on the temple a mixture of equal parts of cerate and extract of belladonna. . . . I employ the extract of belladonna, thinned down with enough water to give to it the consistency of syrup, rubbed on the eyelids. The dose varies from one grain to one-fourth."

Piorry's masterful effort was passed unheeded and unnoticed by the profession for nearly thirty years. There were a few who did not entirely lose sight of his labors, who worked patiently and thanklessly seeking the truth. Thomas Young, in 1801, in discovering astigmatism, and James Ware, 1812, in discovering hypermetropia, laid the grand foundation on which all of our present knowledge is based. After these, Beer, Bowman, Brewster, Mackenzie, Lawrence and others worked patiently and helped to build that great structure which was finished by Leibreich, von Graefe, Wecker, Holmholtz, and, last and chief of them all, Donders. To these great and glorious physiologists, the civilized world probably owes more than to any other benefactors. Think of the tens of thousands that are to-day made useful and happy by the ingenuity and gratuitous work of these men that would be otherwise sufferers and dependents. Think of those poor sufferers who changed from one occupation to another, seeking in vain for work that they could do in comfort, when, finally, in despair, they became either vagabonds or criminals, or both. Clerks, bookkeepers, seamstresses, tailors, students, teachers, writers and professional men by the thousands and ten of thousands did their work with "bursting heads" and "maddened brains" before these physiologists taught us how they might be relieved. They "drugged" and "drugged" and sought "fresh air," "walked the moors," sought relief at the mountains and at the seashore and returned to their labors with new hopes, but to be disappointed in finding their old companion, headache.

It was they who lifted high the veil that clouded their benighted existence and made life a joy and work a pleasure. They deprived the obnoxious traveling spectacle vender of his swindling job, created a new field in ophthalmology, and made refraction the most exact and scientific branch of modern medicine.

Many of the writers before 1860 described the clinical picture, and many of them saw and knew that the eye was at fault. Lawrence, in his valuable Treatise on the Eye, published in 1855, has this to say in regard to these symptoms, under the title of amaurosis: "Frequently the impaired vision is preceded or accompanied by headaches, giddiness, dizziness, etc. . . . Sometimes there are pains in the forehead, in the eyebrow, and in one side of the head; these are occasionally severe. There may be heaviness about the eye, aggravated by motion or employment of the organ." On the following page and under the same heading he says: "In a great number of instances the immediate or exciting cause is excessive exertion of the organ, particular its employment on minute or shining objects. Hence, it is frequent in those who follow the various occupations requiring close attention and constant exertion of the organ, as in tailors, shoemakers, mantua makers, milliners, seamstresses, law writers, compositors, watchmakers and the various workers in metals."

Mackenzie, von Graefe and many others described this condition over and over again, yet they were all slow to advise the use of glasses for its relief. Some—in fact, most of the writers previous to 1855—advised against the use of glasses in these conditions and gave many curious and unfounded reasons for their opinions. Mackenzie says, in regard to the use of glasses in asthenopia, in his most excellent book, 1856: "Few patients, not even those of them who are mere children, continue to be long affected with asthenopia without making use of convex glasses. . . . The only danger is that the patient begins with glasses of too strong focus, so that, when age advances, he finds that he has forestalled the advantage he might otherwise have derived from glasses adopted to an increasing long sightedness."

Before the scientific application of the means of relief could be made, it was necessary that the cause of the head pain from the eye should be ascertained. The study of hypermetropia, astigmatism and muscular insufficiencies and their relation to accommodation must be perfected before true progress could be made. Hypermetropia was early confounded with presbyopia. This condition was the first to receive attention as an etiological factor of the production of headaches. James Ware,[5] in 1812, was the first to describe the condition intelligently, and Donders says of this article: "In these few words James Ware entitles himself to be called the discoverer of hypermetropia." After him we see Sichel (*Annals d'oc.,* 1845) dealing with this subject in a scientific manner. Bohm, Ritterich, White, Cooper and others contributed to our knowledge of hypermetropia. The first definite article on hypermetropia and accommodation and their relation to asthenopic symptoms is to be found in Ruete's *Lehrbuch der Ophthalmologie,* etc., 1853.

Two years later Carl Stelwag von Carion presented to the Imperial Academy of Science, at Vienna, his essay on "Die Accommodationfehler des Auges," and a few years later the works of Helmholtz and of Donders perfected the knowledge necessary on hypermetropia.

The discovery of astigmatism by Thomas Young,[6] in 1801, and the correction of his own astigmatism by the royal astronomer Airy, in 1837, were long steps in the right direction. This work, too, was left for Landolt, Wecker, Graefe, Helmholtz, and especially Donders, to finish and perfect, which they did in about 1860; and it was about this time that the relation of the accommodation to the various ametropias was understood, and the clinician was ready to study the various clinical manifestations growing out of these conditions. Donders' scientific and masterful work on "Accommodation and Refraction," in 1864, was the crowning work of that age and placed refraction on a solid and scientific standing that will endure forever. To that one work we owe most of our present knowledge of the various neuroses in connection with the ametropias. To von Graefe first, and Wecker, Landolt, Maddox, Stevens, Ranney, Savage and others after him we are indebted for the knowledge that muscular insufficiencies are energetic factors in the production of asthenopic symptoms.

The credit for the discovery of the cure of headaches, sick, chronic, nervous, or migrainic, by the correction of ametropia probably belongs to no one man. It was a gradual evolution growing out of the observations of such men as Ware, Beer, Bowman, Mackenzie, Bohm, Sichell, Lawrence, von Graefe, Wecker, Leibreich, Helmholtz, Donders and scores of others. Yet after the glorious work of these masters it was about two decades before the oculists in general became aware of the wonderful relief that could be secured in these cases by the proper adjustment of glasses. It has only been a few decades since the profession in general were ready to admit that headaches were curable by ocular treatment. Even to this day there are some skeptics, despite the fact that there are thousands of the profession that would be unable to do their work without these mechanical aids.

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[5] Phil. Trans. for the Royal Soc., Lon., 1813.
[6] Phil. Trans. for 1801.

The first clear statement that I have been able to find—that headaches were capable of being cured by the use of glasses for the correction of ametropia—was made by Donders, in 1864, in his "Accommodation and Refraction of the Eye," page 233. We read the following exceedingly important and interesting remarks in the report of a case: "Madame L. complains: 'I have done much work and have spoiled my eyes; I am only 36 years of age, and I can no longer see anything in the evenings.' Not read? 'O, yes, but I can do no fine work, and reading also tires me; I get terrible neuralgic headaches, for which my doctor, and also Dr. K., the homeopath, have given me all sorts of things in vain. . . . 'Must I then use spectacles?' It is desirable, indeed necessary, even by day, particularly if you wish to be free of your nervous headache . . . and, depend upon it, the spectacles will cure your nervous headache."

After these history-making remarks, which we might say gives to Donders the honor of discovering the cure of headaches by means of glasses, there were many workers in the field (Dobrowolski[7]). As early as 1869 we read the following from an article on "The Use and Abuse of Spectacles," by Dr. Carleton, in the proceedings of the Conn. Med. Soc.: "Our knowledge of the affection of the eye, arising from the anomalies of refraction and accommodation, has greatly increased during the last few years. Many diseases that were formerly considered incurable are now found to be perfectly amenable to treatment."

"I will cite one class of cases familiar to all: that of the overworked student. How frequently do they consult us in regard to eyes apparently healthy, complaining that they can read only for a few minutes at a time without everything becoming blurred . . . and if they persist in their work an unbearable nervous pain through the orbits and temples obliges them to close their eyes and rest. They anxiously ask if they are in danger of becoming blind. This question was formerly very frequently answered in the affirmative."

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[7] Archiv. für Ophth., 1868, xiv, reports the relief of headaches by use of correcting lenses.

Great credit is due Dr. S. Weir Mitchell for his early work on this subject. Honor is peculiarly due him from the fact that he was one of the first to notice these headaches, he not being an oculist. His opinions and observations, therefore, should have had the more weight as he had nothing to gain except the good of his patients. In the *Medical and Surgical Reporter*, 1874, page 82, he says: "Lastly, I beg to call attention to the headaches which come of some intraocular disorder or disorder in the motor muscles of the eyeball. . . . We all know well enough that headaches come with many intraocular disorders, but neither in works on the eye or elsewhere is it made plain that headaches may be for years almost the sole symptom of disorders of the accommodation, or of defects in the orderly actions in the external eye muscles. Yet so often have I seen this sequence, that in chronic headaches I rarely fail to insist upon a careful study of the eye. Again and again have I been rewarded by finding the pain fade away when the optical defects had been duly corrected."

"The strain caused by the various forms of astigmatism I have seen cause headaches, but slight insufficiency of some one of the extraocular ball muscles is far more likely to give rise to it. Indeed, I could relate case after case of this kind." In this same article he reports a case of hypermetropia from Dr. Thompson's case book, in which headaches of long standing are cured by the use of 1/30 lenses; also a case of myopic astigmatism with headaches cured by the use of correcting lenses. In regard to the type of these headaches, he says: "I have refrained from saying anything thus far as to the type of these headaches, but I desire to call attention to the fact that in Mrs. B.'s case (a case of hypermetropia) the headache varies in character and assumes at least one of the rarer forms of migraine, that is, headaches beginning with blindness over half the field of view and ending with nausea and vomiting. The absolute relief given by the glasses is worthy of note in a form of head pain so rarely helped by any means."

In the *Journal of Med. Science,* 1876, in an article on "Headaches from Eye Strain," Mitchell says: "What I desire, therefore, to make clear to the profession at large is:

(1) "That there are many headaches which are due indirectly to disorders of the refractive or accommodative apparatus of the eye.

(2) "That in these instances the brain symptoms are often the most prominent and sometimes the sole prominent symptom of the eye trouble, so that while there may be no pain or sense of

fatigue in the eye, the strain with which it is used may be interpreted solely by occipital or frontal headache.

(3) "That the long continuance of eye trouble may be the unsuspected source of insomnia, vertigo, nausea, and general failure of health."

This is the first article in which the attention of the profession is called to the fact that many headaches are due to errors of refraction and are curable by means of glasses. I have quoted the article at length, as I consider it history making, and deserves to be read by every man interested in ophthalmology. It is the first positive statement that migrainic headaches, nausea, vomiting, and vertigo are due to errors of refraction or accommodation, and are amenable to treatment applied to the eye. It is also the first article that calls attention to the headaches due to insufficiencies of the extraocular muscles.

W. A. Braily[8] has a long article on "Astigmatism as a Cause of Headache," in which he reports a number of cases of headaches cured by the proper adjustment of cylindrical lenses, and points out the importance of examining the eyes under the influence of atropin, and the proper correction of astigmatism in all forms of chronic headaches. Dr. William Thompson has an article in the *Medical News and Libr.,* 1879, on "Astigmatism as a Cause for Persistent Headaches," in which he says: "More than ten years ago I became aware that persons who consulted me for imperfect sight presented symptoms not fairly described in the various textbooks under the general head of asthenopia. . . . These symptoms may be enumerated as pain over the brow, in the temples, occipital regions of one or both sides, and vertex, with a sense of fullness, amounting to vertigo and nausea. . . . General nervous prostration and occasionally choreic twitching of the muscles of the face." In this article he reports cases as far back as 1869 of migrainic headaches cured by the correction of astigmatism.

Dr. Edwin Hill[9] has an article on "Headache and Nervous Exhaustion, Its Cause and Cure," in which he says: "It is a lamentable fact that, until within a recent date, the medical profession has been at least two generations behind the times in which they live; and even now the older members look with distrust (to say the least) upon the younger portion of the fraternity who are anxious to get up to the times and avail themselves of any means to cure their patients.

"When Prof. Donders explained to the profession that defects of vision cause so much nervous suffering in the world, how was it received? . . . Let me copy the words of Dr. Jones, of Queen's University, Ireland: 'How many an unfortunate might escape a world of drugging if the practitioner could recognize the effect of astigmatism in the headaches, the dizziness, the inability to work—symptoms so often referred to the stomach—all corrected by suitable glasses.'" He also says in the same article: "It is no longer a theory, but a well-known fact, that headaches, whether habitual or periodic, spinal irritation, dizziness, insomnia, nausea, inability to do near work, general failure of health, and not a few of the many causes of St. Vitus' dance, are due to eye strain, and can only be permanently cured by the correction of the visual powers, and so remove the cause of the irritation."

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[8] Guy's Hosp. Reports for 1878.

[9] Med. and Sur. Reporter for 1881.

I desire to call attention to one additional article on this subject, which gives great credit to its author, and wherein great stress is laid on the cure of sick-headache by the correction of hypermetropia or astigmatism, or both combined. In the *Medical and Surgical Reporter,* 1882, page 117, Dr. G. C. Savage has an article on "Sick-headache; Its Cause—Hypermetropia and Astigmatism, Either Alone or Combined, and Its Cure, a Properly Fitted Glass," in which he makes the following interesting statement: "In this article I propose to make known to the medical profession my discovery of the real cause and the successful treatment of sick-headache, that opprobrium of medical art from the beginning to the present time. I shall give the circumstances that led to the discovery, and shall offer arguments to convince others of the correctness of my conclusions.

"One has said: 'Headache destroys much of the happiness and cheerfulness of life, and reduces many a highly gifted and poetic soul to the level of a discontented drudge.' This language is doubly applicable to sick-headache, that dreadful disease that makes youth look forward to old age with a feeling of delight, and long for its approach, when, as he has been told, his malady will disappear.

"I for years had been a sufferer from sick-headaches and after becoming a member of the medical profession sought from all sources a cure from a malady, but found none. I believed the teachings of authors as to the cause of the disease, viz., stomach trouble, and took almost every remedy recommended, but continued to have attacks of greater or less severity every month, frequently twice a month. Finally I gave myself over to what I considered my unalterable fate, and thought of nothing as a cure of my disease but old age, and consequently, when suffering, would almost have a secret longing to be old, that I might be free. I had often wondered why it was that old age gave immunity, and turned in vain to authorities to find a satisfactory reason."

The circumstances that led the doctor to make this discovery, i. e., that glasses cure sick-headaches, as he tells us in this article, was that finding his mother, who had been a sufferer from migraine all of her early life, had been free since about her fiftieth year, at the same time she had observed that she did not see so well at a distance. On examining her to ascertain the cause of her defective distant vision he found that she was hypermetropic, and that with glasses of 1/24 focal distance for the right eye, and 1/36 for the left her vision was normal at a distance. On reflecting on the disappearance of her migraine at an age when she no longer had her accommodation, the idea struck him that perhaps her sick-headaches had been due to her hypermetropia. Acting on that suggestion, he decided to make a test of his own case. He used atropin at a time when his usual headache began and was relieved at once. He corrected his hypermetropia and astigmatism and found that he was relieved of his headaches while he was using his glasses and that they returned when he used his eyes without them.

Amongst the more recent workers in this field who have not worked less diligently are G. T. Stevens, A. L. Ranney, Noyes, H. Knapp, Schwenger, Fuchs, Maddox, St. John Roosa, G. C. Savage, Gould, and many others.

Especial credit is due George T. Stevens, A. L. Ranney, and G. C. Savage for their original work on muscular insufficiencies in the production of headaches and other neuroses. Martin's[10] article on migraine from astigmatism is so forcible and conclusive that it leaves little for doubt even for the skeptic. I do not consider it "an epoch making article" (Gould), as I have already referred at length to articles which have amply covered the ground at a much earlier period. We owe much to Gould for his ceaseless efforts to bring these facts prominently before the profession. We can never pay the debt we owe to that countless number of silent workers, all along the line, whose modesty has kept their names obscure, yet whose work has had its influence, and who have relieved their thousands and helped to perfect this branch of medicine until to-day it stands a glorious monument of which future historians will say was erected and perfected in the last half of the nineteenth century.

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[10] Annals d'Oculistique, 1888.

WHAT ARE THE SO-CALLED REFLEXES WHICH CAN PROPERLY BE REFERRED TO EYE-STRAIN?

By Lucien Howe, M.D.
BUFFALO, N. Y.

When Donders showed that the group of symptoms which had been called asthenopia was in reality dependent upon efforts of accommodation or convergence, he included in that first group only the few symptoms which were intimately related to the eye itself. These were principally pain or discomfort at near work, imperfect focusing or blurring of vision, and some hyperemia of the conjunctiva or increased lacrimation. A little later we learned that a second group of symptoms, including the various forms of headache, is often due to the same cause. This is not simply frontal headache, but that which is referred to the vertex, to the occiput and even that which extends down the back. It is unnecessary to dwell upon the anatomical and physiological reasons for these headaches in connection with efforts of accommodation. We have also learned since the time of Donders that when the relation between accommodation and convergence is disturbed—either by some anomaly, or even artificially—as we may do by placing certain glasses before the eyes, there results, at least in certain persons, a feeling of discomfort more or less distinctly approaching nausea.

Nearly every ophthalmologist has learned that these and a few similar symptoms are in some way associated with efforts at accommodation or convergence, or with what we usually call eye-strain. These constitute a third group of symptoms, and for reasons presently to be mentioned, can properly be admitted among the reflexes of this eye-strain. Up to this point we are practically all of the same opinion.

But when we ask what other symptoms, or certainly what organic lesions, are the result of eye-strain, then confusion begins. Thus most of us have seen curious cases in which some abnormal condition or symptom has apparently improved after proper glasses were fitted. But we do not venture to say that the glasses produced the improvement, because we have not taken the pains to make the equally important control observation,—namely, to investigate as to how often or under what conditions the same abnormal condition also improved without the fitting of glasses.

Concerning a very large number of changes in the eye or symptoms in different parts of the body the more careful ophthalmologists simply say they are not yet ready to express an opinion as to whether these are, or are not, the result of eye-strain.

They look with interest for painstaking investigation and for a calm impersonal statement of the results, no matter by whom they are given or what they may be.

But while most of us are thus restrained by the desire to accept only what is really proven, on the other hand we find occasional practitioners of ophthalmology, especially in America, who are ready to assert, in offhand fashion, that a host of organic changes in the eye or elsewhere, and all sorts of symptoms, are more or less directly the result of eye-strain. Now, with a question of this sort, the experience of any one individual is of comparatively little value, so it seemed desirable to ascertain how many had observed actual changes in the eyes, or other organs, or especially any reflexes in addition to those in the three groups already mentioned, which they had even thought could be ascribed to what we call eye-strain. A provocation for raising this question has been offered since our last meeting by one of our members in a paper entitled "The New Ophthalmology." In that the writer specified a large number of pathologic conditions and symptoms which he considered to be due to eye-strain, and named other colleagues and practitioners, some not ophthalmologists, as participants in the same opinion.

Moreover, the impression was given that the rather extreme opinions expressed were being generally adopted by American ophthalmologists. It may be remembered that, in order to ascertain the frequency of any such reflexes or other diseased conditions, as shown by the experience of American ophthalmologists, a few months since I took the liberty of sending a circular letter to the members of this society and to certain other ophthalmologists in addition. At least a preliminary report can, therefore, be made of the results of this inquiry, even though a complete study of all of the data obtained would require a much longer time than has elapsed since this circular letter was issued.

As that letter may have been forgotten by some of the members of this society and as it would, of course, be new to other readers, a copy is given. It is as follows:

183 Delaware Ave., BUFFALO, N. Y., Feb. 1905

MY DEAR DOCTOR:

You are aware that some ophthalmologists insist that certain diseases of the deep structures of the eye, of remote organs, or of the general system, are more or less directly the result of "eyestrain."

Owing to the vagueness of most of these statements, they have usually been allowed to pass without notice. Of late, however, a member of the Ophthalmological Society, in publishing various books and articles, partly popular, has specified a number of these diseases as being the result of "eyestrain," and has named certain medical journals, and also several practitioners, as of the same opinion. Among the reasons why other ophthalmologists reject this "great truth" he says that "the desire for consultation practice, referred cases, professorships, hospital positions, and 'success' make the cunning silent or conservative"; moreover, that "nine-tenths of the glasses prescribed in these institutions" (public clinics) "are not correct," and proclaims various theses of a similar character, too numerous to mention here.

As it is quite possible that the few are right, and the many wrong, it seems worth while to obtain, if possible, the experience of a considerable number of practitioners. The following questions are, therefore, sent to members of the Ophthalmological Society, and to other ophthalmologists of large experience, in order that the replies, when tabulated, may show in just how many, out of the thousands, or hundreds of thousands of cases observed, it is possible to assert that these different diseases are, as claimed, the result of "eyestrain."

The reasons for the inquiry are:

First.—To learn the facts for my own satisfaction.

Second.—To add these to more important data already collected in a study of the ocular muscles, which is now nearly completed.

Third.—Because if the combined experience of many practitioners shows beyond doubt that these different diseases or any part of them *are* the result of "eyestrain," that fact will be another contribution by Americans to the practical aspect of this department of ophthalmology.

If, however, such experience shows that these different diseases *can not* honestly be ascribed to that cause, then in the future it will be impossible for any one to repeat those claims, as representing the opinions of American ophthalmologists.

With this rather extended explanation, necessitated by the circumstances, I venture to ask if you will fill out the blank on the opposite page and return it in the stamped envelope here enclosed. If, in the list of diseases specified none has been seen which was the result of eyestrain, please write across that part of the paper the word "none." If you have seen any, then specify the number, and add in a footnote whether or not you would be willing to give more data or detailed histories if requested to do so.

Any remarks or comments which follow would simply be classified, and no names would be mentioned without first asking permission, as it is desirable to keep the inquiry as free as possible from any personal bias.

Very truly yours,

Lucien Howe.

The questions are as follows:

1. How many, or about how many cases of diseases of the eye have you recorded as seen in private and in hospital or dispensary practice altogether?

2. Among them all how many have you recorded in which "eyestrain" can justly be considered in any way a cause of any one of the following diseases or conditions?*

Keratitis? Iritis? Glaucoma? Cataract? Choroidal diseases?

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* The diseases are selected from the articles on The New Ophthalmology.

Hyperemia of the retina? Diseases of the macula in any form? Pigmented retinitis? Other retinal diseases? Sinus diseases? Pharyngitis? Laryngitis? Aphonia? Common colds? Influenza? Pneumonia? Tuberculosis? Anorexia? Denutrition? Intestinal fermentation? Constipation? Disorder of the liver? Dyspepsia? Loss of appetite? Nephritis? Cardiac palpitation? Chorea? Epilepsy? Insomnia? Scoliosis?

This letter was sent:

1. To 162 members of the American Ophthalmological Society.

2. To eight other ophthalmologists whose opinions were asked because of their unusually large experience, or because they had expressed the opinion that eye-strain was the cause of a considerable class of reflexes.

3. To 28 others who were also not members of this society—some of whom did not claim to be ophthalmologists, but whom the writer of The New Ophthalmology had named as being advocates of the so-called advanced views.

One hundred and fifty replies have been received to the 208 letters which were sent out. The members of this society returned by far the largest percentage, and to them I wish to express my thanks still again for these answers, as the search for the desired data must have involved no small amount of time and care.

In attempting to tabulate these replies, a few simple rules were followed:

1. When an observer gave the total number of cases which he had seen in a range from minimum to maximum number—for example, when he stated that he had seen from thirty to forty thousand cases, the lowest number mentioned was tabulated.

2. When an observer reported that he had not observed a single case of a given kind, that statement was simply entered in the table.

3. When an observer reported that he had seen this or that symptom as a result of eye-strain, at the same time giving the number of cases in figures even within a certain range,—for example, eight or ten times—then here also the lowest number was taken to safely represent his experience.

4. When an observer did not use any figures to express his experience, either as to the total number of patients seen or the number of cases of reflex of any kind,—when, for example, he reported having seen "several" or "a few" or "not many," then evidently it was impossible to incorporate these statements in a table of statistics. The results of the inquiry were as follows:

Total number of replies received was 105; number who gave no figures nor approximation, some saying they are not ophthalmologists at all, 34; number who reported, at least approximately, their total clinical experience was 71; in these 71, the number who answered all of the questions with figures—that is, in such a way that they could properly form a part of a table of statistics, was 24.

Let us consider, first, the experience of these 24 observers whose reports were complete. They had treated at least 1,245,685 patients. If we count 25 to 30 per cent. of these as cases of refraction or muscular anomalies (which is a low percentage even for hospital practice in America), then we find that they had treated together something over 350,000 cases in which so-called eye-strain is a factor.

Twenty of these 24 observers reported that they had not seen a single case in which the diseased conditions or reflexes mentioned in the circular letter were apparently due to eye-strain. Four of these observers, however, reported that the following were apparently the result of the eye-strain, namely: Choroidal diseases, 3; diseases of the macula, 1; hysterical laryngitis, 1; chorea, 1; epilepsy, 5; insomnia, 12.

That is to say, these are all of the diseases or reflexes which were found by these 24 men among about 350,000 cases of refraction or muscular anomalies.

At first glance it may seem disappointing to have received only 24 answers which contain statistics capable of being tabulated from the 208 letters which were sent out. A moment's reflection, however, will show that this number is really quite large. For when we remember the high-pressure system under which the American physician, especially the American ophthalmologist, usually works, it is rather a matter of surprise that so many replies were received, especially when we take into account the time and care necessary to answer that circular letter thoroughly, as was done by at least some of our colleagues.

What has been said thus far of the results relates only to 24 observers. But there were 47 others whose testimony is not to be left out of account. They gave approximately their total experience in figures, but they did not answer the other questions with figures. Instead, they were in doubt as to having seen some of these conditions or reflexes (as can occur to any of us) or they reported simply "a few cases" or "many," etc. Evidently it is impossible to make a statistical classification of these replies. But it is possible to classify the doctors themselves. That is to say, it is possible to state how many of the entire 71 saw examples of this or that disease or symptom in the list cited, and also what that experience was. This is shown in the following table. In this the first column gives the number of observers who have not seen any of the reflexes or conditions mentioned in the list. The second column gives the number of those who were doubtful if they had seen any such. The third column, the number who were quite sure that at some time they had observed some such symptoms or conditions; the fourth column, "A," the number who had seen "a few"; the fifth column, "B," the number who had seen "several" or "some"; the sixth column, "C," the number who had seen "a number" or more.

	None.	Doubtful.	Yes.	A	B	C
Keratitis	64	4	1	2	...	...
Iritis	66	2	...	3	...	
Glaucoma	60	7	1	3	...	...
Cataract	60	4	1	5	...	1
Choroidal diseases	58	2	3	8	...	...
Hyperemia of retina	46	4	4	14	...	3
Macular changes	60	3	3	5	...	...
Anorexia	67	1	3	...	...	...
Denutrition	66	...	3	2	...	...
Intestinal fermentation	69	...	1	...	1	...
Constipation	67	...	1	3	...	...
Disordered liver	68	...	1	1	...	1
Dyspepsia	60	...	4	7	...	...
Loss of appetite	60	...	4	7	...	...
Nephritis	69	2	...	...	...	...
Cardiac palpitation	65	...	3	3	...	...
Chorea	46	2	4	18	...	1
Epilepsy	55	2	1	13	...	...
Insomnia	49	2	8	10	...	2
Scoliosis	69	1	...	1	...	...

These data and a more careful study of the answers show:

1. That the personal equation enters largely into these reports. Only comparatively few individuals have seen many such reflexes, while most have observed only a few or none at all.

2. This large experience shows, beyond question, that in the future it will be impossible for any one to repeat the claim that these reflexes or conditions, or any of a similar kind, are considered by most American ophthalmologists to be the result of eyestrain. That is simply the assumption of a few enthusiasts.

3. An important cause of our confusion is the lack of definition of the morbid conditions under discussion—such terms as intestinal fermentation, disorders of the liver, nephritis, etc., having no definite meaning.

4. Another cause is the lack of exact diagnosis of the condition or the symptom which is suspected to be the result of the eye-strain. One man may call a hyperemia of the retina what another would call normal eye ground.

In view of these facts, if we ask, finally, what are the symptoms which can be referred to eye-strain, we can safely include in that list those in the three groups first mentioned,—namely, symptoms referred to the eyes, to the head in general, or the stomach. Other morbid conditions may be dependent upon eye-strain, but proof of that is what we need, and not simply the affirmative evidence, but especially the negative evidence—the control observations.

When any condition or symptom is stated to be due to eye-strain, then, if that condition or symptom is one which even the majority of other practitioners have not also observed, evidently the burden of proof is on the person who makes any such assertion. It is for him to show that a real relation does exist between the eye and that condition or symptom. Also, the more unusual that supposed condition or symptom is, as compared with the very large experience here collected, the more careful, then, must a writer be to make his proof abundant and conclusive.

He who does this, in a patient, painstaking manner, renders a distinct service to ophthalmology. He who does not or can not furnish such proof, simply indulges in statements which are, to say the least, misleading and unscientific.

THE SYMPTOMS OF AMETROPIA.*

By Howard F. Hansell, M.D.
PHILADELPHIA.

The inclusion of all ailments affecting a patient at the time of an ocular examination is to attribute to ocular affections symptoms that may have only a distant or indirect association with the refractive condition of the eyes, or, to state the proposition in more definite terms: Is this or that complaint due to eyestrain even under the condition of its relief by the cure of the eyestrain? Can special knowledge or extended experience enable the oculist to prophesy that relief of the symptoms which called for ocular examination will follow skillfully adjusted glasses, and, third is it proper to refer the symptoms to ametropia alone in the presence of defects of balance of the ocular muscles? These three problems confront the oculist daily, and in order to solve them we must learn by careful examination the status of the eyes, the relation of their use to the oncoming and maintenance of the symptoms, and should inform ourselves of the condition of health or disease of other important organs of the body. The tendency of modern ophthalmology seems to embrace a large part of other branches of medicine and to narrow its own sphere to correction of errors of refraction. Histology and pathology of the eye should not be neglected. Inflammatory affections of the eye are not all due to uncorrected ametropia. How can we prove that senile cataract or glaucoma could have been prevented had the patient early in life worn glasses? We have not yet advanced to that stage when we study diseases of the body in relation to ocular defects and fail to consider diseases of the eye in relation to general diseases.

The symptoms of ametropia are ordinary and extraordinary. We have been made familiar by the abundant ophthalmic literature of recent years with the former and I will not take up your time in reviewing it. It is with the latter that I propose to deal. At the outset I am handicapped by the fact that my practice is limited to the treatment of affections of the eye and I am, therefore, unable to learn the proportion of symptoms classified by me as ocular that are found in diseases that have no known relation to the eye. We read that 80 per cent. of all headaches are ocular. This means presumably that 80 per cent. of the cases of headache applying at the oculist's office are relieved by ocular treatment and 20 per cent. are not benefited. Of the other cases of headache, those that do not seek ocular treatment, no account is taken. The so-called functional nervous diseases are seldom seen, in their early stages at least, by the oculist, but are sent to him when they have become confirmed, have lost their functional character and progressed into organic diseases. The ophthalmologist and neurologist often have opposite views. One claims 50 per cent. of cures by ocular treatment, the other 1 per cent. only, so the searcher after truth is confused and mystified and is forced into agnosticism. He can not only not learn the proportion that might have been cured by eye treatment, but also whether eyestrain is any considerable factor in the causation. In this connection a quotation from Rosenbach[1] is appropriate: "There is a condition in which disturbances of organs supplied by the pneumogastric are associated with eye disturbances, particularly hyperemia of the conjunctiva of the upper eyelid. The pneumogastric symptoms consist mainly of respiratory oppression, palpitation, flatulence, dyspepsia, abdominal pain, etc. The conjunctional hyperemia is frequently associated with irritability of the nasal mucous membrane. The condition is a reflex neurosis which in some cases arises primarily in the eye, in others in the pneumogastric nerve. The former is cured by curing the cause of the eye disturbance; in the latter the treatment must be directed mainly to the abdomino-thoracic symptoms; the local treatment to the eye only keeping these symptoms in check. Regulation of digestion, bowels and diet and change in the mode of living will cure the entire condition without the employment of local eye agents." And, again, Wheelock (*Med. Rec.*, Oct. 21, 1905) describes 7 cases of defective vision occurring in boys and girls shortly before the age of puberty. They were characterized by great loss of vision, marked limitation of the visual field, and an eyeground varying from normal to one with frayed vessels with a shotsilk fundus, while the general health of the patient remains good. These phenomena, he believes, are due to changes in the nerve and blood stream incidental to the development of the reproductive organs, as treatment is of little avail and recovery is not complete until menstruation has been established in girls and the seminal function in boys. He particularly emphasizes the existence of defective vision for distance and reading, limitation of the field for form and color, the absence of chlorosis and hysteria, the existence of leucocytosis, and the recovery of normal sight. My comment on this is that personally I have never seen such cases. My experience is limited to the development and increase of myopia at the time of puberty and to weakened accommodation power.

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* Read before the Section on Ophthalmology, College of Physicians, of Philadelphia, Nov. 21, 1905.

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[1] Muenchner med. Wochen., 1905, No. 52.

On the other hand, the claim is indisputable that cases of functional nervous disease—chorea, vertigo, epileptiform convulsions, and others that have been described time and time again—have been cured by eye treatment. For example, a gentleman of 39 was sent to me three years ago by Dr. S. S. Cohen on account of vertigo. Dr. Cohen reported that he could find no systemic condition which could be held responsible. I ordered a minus cylinder for the right eye and a plus cylinder for the left eye. For two and a half years he had no return of his vertigo. At the termination of that time it recurred and persisted for six months in an aggravated form because he had worn an optician's correction which, instead of relieving, increased the eyestrain. Those of us who have been in practice some years have met with many such cases, and not only vertigo, but symptoms of brain tumor, of disorders of the stomach, liver, kidneys and the many other affections mentioned in the voluminous literature of refractionists. My endeavor has been to prove to myself whether these accidental and uncommon symptoms are really indications of the want of glasses—symptoms of eyestrain—and what relation they may have to disordered function of other organs or of the nervous system. Eye defects alone can not be held responsible. The expression of eyestrain assumes many forms, controlled or modified by the impressionability of the higher centers and the degree of responsiveness of the muscular and vascular systems to their action. The situation of the reflex and its character are individual and may be ascribed to inherited or acquired personality. Thus, astigmatism in one individual will give rise to headache, in another to facial chorea, in another to vertigo, in another to indigestion, according, not to the degree or axis or kind of astigmatism, but to individual characteristics which, in turn, are dependent upon heredity or environment. Or astigmatism or other eye defect may cause no reflexes whatever and not even imperfection of vision of which the individual is conscious. These statements are almost platitudes, so familiar are you with their import. The argument so often used that, because all persons with hyperopia or astigmatism do not have epilepsy, that epilepsy can not be a reflex of ametropia, is partly true and not altogether without value, as some writers declare. That it is the cause in only 3 per cent. or 4 per cent. is certainly not because of the eye defect, but because it takes at least two factors, namely, eyestrain and a predisposed nervous organization.

Perhaps the strongest argument that can be brought to weaken the claims of ophthalmologists that many of the functional nervous diseases are due to errors of refraction and muscular anomalies is that the ophthalmologists do not see their failures as often as neurologists see them and the failures are never published. We read of cures of all kinds of reflexes by glasses, but we do not see records of failures to cure. I propose to furnish a few. A man of 29 complained of constant headache aggravated by the near use of his eyes. He was repeatedly examined during a period of 18 months at the suggestion of his family physician and was kept perfectly corrected of hyperopia and astigmatism. He had no other symptoms of brain tumor, but died from that affection some months after I last saw him. A girl of 19 had the usual symptoms of eyestrain—all due to uterine disease. A lawyer in active practice has severe headaches every week or two during his working months and is entirely free from them during his six weeks' vacation in the woods. Astigmatism and presbyopia fully corrected during the 5 years he has been under observation. The ophthalmoscope shows during the period of headache venous hyperemia of the retina and a slight edema of the upper and inner disc edges, and a day or two after the paroxysm of pain has passed away the retinal circulation has been normally re-established and the effusion absorbed. A young married woman has severe headaches independent of the use of the eyes, attended with nausea and often vomiting, recurring at irregular intervals. Full correction of low hyperopia had no effect. A student of 27 had no headache and no nervous symptoms. He complained that his eyes felt tired occasionally and print became blurred. He could read only a few minutes by artificial light. Under mydriasis + 4.50 R. and + 5.50 L. gave full acuity of vision. He had never worn a glass and was unconscious of the need of glasses except for the confusion of letters in reading. A girl of 11 had blepharospasm and chorea of the right side of face for 3 years. The muscular twitching had no relation to the use of the eyes. Media and fundi healthy, no muscular imbalance, low hyperopia. The symptoms were not relieved by prolonged paralysis of accommodation. Girl of 18 has been wearing correct glasses for hyperopia and astigmatism since she went to school and, in spite of them, complained of constant headache, aggravated by the use of her eyes. The symptoms in this case were due to hyperphoria of 1°, for they were relieved by her glasses combined with prisms and returned when the prisms were removed. A girl of 26, delicate and anemic, in addition to the usual symptoms of asthenopia, suffered frequently from attacks of fainting and attacks of semiunconsciousness attended with slight and distributed muscular contractions. Orthophoria. R. + .50 c. ax. 170°, L. + 1.25 c. ax. 180°, worn for 2 years, had no effect in relieving the epileptiform convulsions. At the last examination, 2 years after the first, the papillas appeared whiter than normal and the foveal region of each retina was the seat of a few small yellow spots which looked, according to my notes, as though central retino-chorioiditis was commencing.

It is unnecessary to add further testimony in support of the proposition made above that the oculist fails in his full duty when by reason of his enthusiasm or forgetfulness that the eye is only a part and not the whole body, neglects to consider extra-ocular bodily conditions and to give the patient the benefit of other medical advice.

The answers to the 3 questions propounded in the first paragraph of this paper:

Are the reflex symptoms under consideration in any given case due to eyestrain?

Is the coincidental disappearance of extraordinary reflexes due to the wearing of glasses?

Are the symptoms dependent upon errors of refraction or upon loss of muscular equilibrium?

can be given only after careful study of each individual case and can not be prognosticated. No thoughtful medical man can be pessimistic concerning the value of careful refraction work. Since the announcement in 1869 of the discovery by Thomson that uncorrected errors of refraction and presbyopia were responsible for headache and obscure nervous symptoms was the commencement of a new era for oculists and for suffering humanity, his teaching has been recognized and followed and its benefits are incalculable. But while refraction work is the most important function of the ophthalmologist, the practice of ophthalmology embraces diseases of the eye and its adnexa both in their purely local manifestations and as symptomatic of general disease.

RETINAL HEMORRHAGES IN APPARENTLY HEALTHY EYES.*

BY E. W. STEVENS, M.D.

DENVER.

A special consideration of retinal hemorrhages from any cause is of great importance from a clinical viewpoint to both the ophthalmologist and the physician: to the former because they may destroy sight; to the latter because they are often of great value in determining the general condition of the patient.

Setting aside at once retinal hemorrhages due to optic neuritis, renal disease, retinitis, chorioiditis, etc., I confine this paper to hemorrhages occurring in eyes otherwise free from disease.

Primary retinal hemorrhages may occur from the following general conditions:

1. Blood changes: Purpura, pyemia, septicemia, scrofula, pernicious anemia and parasitic blood affections.
2. Cardiac disease.
3. Embolic processes and thrombosis.
4. Disturbances of menstruation.
5. Accidental, including retinal hemorrhages at birth.
6. High arterial tension.

Retinal hemorrhages at birth are, according to Coburn, of frequent occurrence. He examined the eyes of 37 infants still-born or dying before the age of 22 days, and found hemorrhages in 17 cases. Coburn has also collected nearly 700 cases of children who survived and were examined with the ophthalmoscope a few days after birth. Among these the percentage showing retinal hemorrhages averaged about 20 per cent. He points out that the physical conditions of birth strongly favor hemorrhages, especially after the head has been born and the body is subjected to the powerful compression of the uterus. Coburn thinks that such birth hemorrhages may account for cases of congenital amblyopia and also for such anomalies of the fundus, as pallor of the disc, peculiar pigmentation, etc.

Primary or independent retinal hemorrhages in the adult are comparatively uncommon. I have collected from my practice the following cases, whose histories I have very briefly summarized.

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*Read before the Colorado State Med. Society., Oct. 3-5, 1905.

While in most of these cases the retina was unchanged, in a few there were slight changes, such as localized swellings and exudations secondary to the hemorrhages.

Case 1.—Mr. L., aged 64, vision poor in left eye for the past two days. On examination O. D. 4/4, O. S. fingers 1 meter. Small hemorrhage at macula and several larger hemorrhages scattered over the retina. Retinal vessels tortuous. No albumin or sugar in the urine. Has occipital headaches, but health is excellent. No sclerosis. Arterial tension, measured by Riva Rocci with 5-cm. armlet, registered 216 to 276 mm. Hemorrhages increased and burst into the vitreous. Glaucoma developed, T. + 2. Patient is alive, 20 months later. Vision normal in right eye. Left eye quiet for past six months, with light perception.

Case 2.—Dr. W., aged 31. Two weeks ago, while on a hunting trip, suddenly lost sight of right eye. On examination, vision O. D. fingers at 1 meter, O. S. 4/4. Large hemorrhages into vitreous. Urine normal. Patient regained normal vision in two months, two small vitreous opacities remaining. Two years later the fundus in each eye is normal, with normal vision.

Case 3.—Mr. B., aged 44. Found vision poor in O. S. on getting up that morning. On examination, vision O. D. = 4/5, O. S. = 4/60. Large retinal hemorrhage between the disc and macula. Several small hemorrhages above and below nerve. Retinal vessels tortuous. Urine normal Patient a large, fine-looking man, does not use alcohol, but is a very heavy eater—eats four big meals a day. Pulse rigid. No sclerosis of vessels. Died suddenly from cerebral hemorrhage within a year from onset of retinal hemorrhage.

Case 4.—Mr. W., aged 50. Four days ago first noticed vision was bad in O. S. On examination, O. D. V. = 4/5, O. S. V. = 4/30. Large hemorrhage just below disc, with spots of hemorrhage above and below macula. Urine normal. In 3 months vision normal, or 4/5, and no lesion could be discovered with the ophthalmoscope. Three months later a large hemorrhage burst into the vitreous of the left eye and vision lost. Four years later the patient is alive and well, with normal vision in right eye, the left having light perception.

Case 5.—Mrs. B., aged 60. Two days ago suddenly lost sight in left eye. Had just learned of sudden death of daughter the evening before and passed a restless night. On examination, vision O. D. = 4/6, V. O. S. — fingers at 1 meter. Numerous flame-shaped hemorrhages in retina of left eye. Urine normal. Strong, healthy Irishwoman. Pulse tense. Patient had hemiplegia within six months of the retinal hemorrhage, and three months later died from cerebral hemorrhage.

Case 6.—Mr. B., aged 23. Two days ago first noticed poor sight in left eye. On examination, vision of right eye 4/4, left eye

4/30. Numerous hemorrhages scattered over the retina of left eye. Urine normal. Hemorrhages cleared up quite rapidly, vision became normal. In two weeks a fresh hemorrhage occurred. This again cleared up and recovery seemed to have taken place. Another hemorrhage into the vitreous followed and the vision of the eye was lost permanently. Four years later this patient had hemorrhages in his remaining good eye. Vision 4/30. Urine normal. Blood pressure 100 with Riva Rocci. Heart and blood vessels normal. The patient was encouraged by Dr. Hill and myself in his wish to seek a lower altitude, and two months later went to Los Angeles. A recent letter informs me that the hemorrhages are clearing up and relapsing as before.

CASE 7.—C. O'N., aged 10. Noticed sight was bad in the right eye this morning. This lad had been under my observation during the previous week on account of extensive hemorrhages into his conjunctiva and lids, due to a severe attack of whooping cough. On examination, a large subhyaloid hemorrhage extended from about one-third of the temporal side of the disc nearly to the macula. Vision 4/40. In about 8 weeks' time the hemorrhage had become absorbed and vision was normal.

CASE 8.—Mrs. K., aged 55. Vision foggy in the right eye for the past week. On examination, O. D. V. = 2/60, O. S. V. = 4/8. Spots of hemorrhages surrounding macula and above and below disc. Retinal arteries in both eyes tortuous. Urine normal. Arterial tension 197 with Riva Rocci.

These eight cases of retinal hemorrhages may be classified as follows: Retinal hemorrhages, 3; hemorrhages in vitreous, 4; subhyaloid hemorrhage, 1; total, 8.

Now let us examine these cases in reference to cause, prognosis and other points. Three eyes in which the hemorrhage burst into the vitreous became blind and one recovered normal sight with two or three floating opacities in the vitreous.

The large subhyaloid hemorrhage due to whooping cough recovered normal sight and exemplifies, as far as one case can, that the prognosis as regards sight is usually good in this form of hemorrhage. This case, as before mentioned, was under my care for extensive and, to the parents, alarming hemorrhages into his conjunctiva and eyelids when the retinal hemorrhage occurred. Retinal hemorrhages from whooping cough must be very uncommon, though severe coughing might readily, I think, produce them.

In two cases the retinal hemorrhages were followed by the deaths of the patients within the year from cerebral hemorrhages. In both of these cases the arterial pressure was recorded high, but from tactile impression alone.

Cases 1 and 8 registered high arterial pressure with the Riva

Rocci, and I feel sure had I been earlier and better acquainted with this instrument I should have more to say under this head.

Arteriosclerosis combined with increased arterial pressure was probably the cause of the retinal hemorrhages in one case. The senile form of arteriosclerosis is not, in my experience, a cause of retinal hemorrhages. In this form of arteriosclerosis the heart is not necessarily hypertrophied or the arterial tension increased. During the past year I have carefully examined with the ophthalmoscope, with special reference to retinal hemorrhages, the eyes of 54 cases, whose ages ranged from 60 to 90 years. These cases were examined at the Denver County Hospital, St. Anthony's Hospital and in private practice. No cases of retinal hemorrhages were found, though many of the patients were typical pictures of senile sclerosis.

Probably retinal hemorrhages occur more frequently in the diffuse arteriosclerosis of Councilman, which generally occurs in the prime of life, most of the subjects being strongly built, well-nourished, muscular individuals and where hypertrophy of the heart is always present. I know of no observations on this point.

In conclusion, the unfortunate case of Mr. B., Case 6, seems to me to merit a few further observations.

Young men, and more uncommonly young women, between the ages of 15 and 30 years appear to be exposed to attacks of relapsing retinal hemorrhages. While in good physical condition, these hemorrhages come on suddenly. The hemorrhage is absorbed somewhat rapidly and there may be no trace of it left. New hemorrhages soon follow, and in unfavorable cases the vitreous becomes hazy, with the formation of connective tissues as a sequel to the hemorrhages, resulting in blindness from degeneration of the vitreous body and retinal detachment.

The prognosis of these cases is always doubtful, and treatment, on the whole, seems of very little value.

DESCRIPTION OF A SINGLE-STITCH OPERATION FOR ADVANCEMENT OF THE EXTERIOR OCULAR MUSCLES.

By Charles A. Oliver, A.M., M.D.
PHILADELPHIA.

Nine years ago the writer devised the following operation, which has been performed successfully in 120 cases, both in private and public practice. He has taught the method to many medical students and physicians in his clinical services at Wills' Hospital and the Philadelphia Hospital.

Every case was carefully selected and cycloplegic correction, carried as near to the full amount of ametropia as was possible, was tried for three months, before the operation was employed. In each instance, whenever possible, the refractive condition of the weaker eye was constantly kept in the closest obtainable relationship with binocular fusion by means of orthoptic exercises, securing, in a considerable number of the cases, a persistence of the primary good results.

This method is as follows: The patient being properly prepared, general anesthesia obtained, and the field of operation having been rendered as aseptic as possible, a lever speculum is inserted between the two lids in such a way that there is equalized traction upon them, and that the eyeball has free rotation. If it be the external rectus muscle that is to be advanced, the tendon and adjacent capsular membrane of the corresponding internus are freed in the ordinary manner, and the eyeball is allowed to assume its new position. This done, the conjunctiva over the head of the tendon of the external rectus muscle is incised vertically by one or two snips with a pair of fine scissors. The underlying portion of the capsule of Tenon is freed from its attachments, and the tendon and anterior portion of the belly of the muscle are exposed by means of a small blunt hook and some fine dissection which is preferably directed against the posterior surface of the conjunctiva. The hook is held in a vertical position directly against the tendinous insertion of the muscle, and one blade of a muscle fixation forceps is slid vertically beneath the muscle belly and held vertically as far back as may be necessary. The forceps are then clamped into position. The blunt hook is removed, and the muscle is cleared of any extraneous and impeding attachments by dissection.

While the muscle is held in the grasp of the forceps, an iron-dyed, black-silk suture, with a needle at each end, is carried beneath the lower border of the exposed muscle just back of the fixation forceps, brought vertically up through the muscle tissues at the junction of the vertical lower and middle thirds, over the muscle surface. It is then carried through the muscle tissue at a point corresponding with the junction of the corresponding middle and the upper thirds.[1] The tendon is neatly freed from the sclera, and as much of it and the body of the muscle as may be desired are excised. This leaves the shortened muscle broadened to its full width and caught in a vertical suture.

The undissected portion of the conjunctiva situated toward the cornea is lifted in its lower portion, and the corresponding part of the suture is carried well under and into the anterior layer of the sclera. It is then brought out at about one to two millimeters within the outer border of the corneal limbus. The upper portion of the suture is similarly placed in the upper conjunctiva and sclera. Gentle traction upon the suture and adjacent parts is made to ascertain the exact amount both of the lateral and the vertical deviations that have been obtained in order accurately to locate the position of the scleral hold and the points of suture egress in the upper conjunctiva.

The parts being carefully flushed and cleansed with warm sterile water, and all free hemorrhage having been made to cease, the overlying conjunctival flap is smoothed out and laid over the gaping wound. The ends of both the upper portions of the suture are carried beneath this covering flap of mucous membrane and brought out through the membrane in positions corresponding with the now directly underlying sclero-conjunctival stitches. The suture is carefully graded and shortened until the desired-for position of the eyeball is either obtained or slightly exceeded.[2] The free edge of the conjunctival flap is then spread out over the outer half of the cornea, and the suture is securely tied, using a surgeon's double knot.

The parts are cleansed, a drop or two of atropine is instilled, and a binocular bandage is applied. The patient is immediately placed in bed and iced compresses are applied. If all goes well—as has always been the good fortune of the writer—the patient is allowed

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1. If the muscle is very broad, as is frequently the case when carefully dissected free, an additional loop should be made the divisions being in fourths of the muscle width.

2. Preferably some five or ten degrees beyond the desired position when the patient is under the narcotic effects of a general anesthetic.

out of bed in from twenty-four hours' to forty-eight hours' time. The iced compresses are discontinued a day or two later. The stitch may be allowed to remain in position for a period of several days without any discomfort or disturbance ensuing. The parts quickly heal evenly and smoothly—without any wrinkling—and soon assume their normal appearance.

If the primary effects are too great or inefficient, immediate appropriate orthoptic exercises, intentional fixation towards or away from the advanced muscle, the employment of cycloplegics, lessenings and increases of spherical strengths in the correcting lenses, and modified repetitions of the procedure, will soon set matters aright and bring the case into the desired orthophoria for the usual working distances.

A NEW PUNCH FOR REMOVING MEMBRANES FROM THE POSTPUPILLARY SPACE IN TRAUMATIC OR SECONDARY CATARACT AND FOR MAKING AN ARTIFICIAL PUPIL.*

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AKRON, OHIO.

(Illustrated.)

As there are no fibroblasts present in the lens, fibrous tissue is not formed in membranous cataracts due to purely lenticular wounds, but only where there is the usual coincident injury to the iris or adhesion of the lens to the corneal wound.[1] The lens capsule, when opened, retracts, and its edge rolls outward, exposing the lens fibers to the aqueous. Some or all of the fibers swell, protrude from the opening, and later break up. A clear pupillary space may result, if the fibers are chiefly absorbed or removed, whether the opening in the capsule is due to traumatism or decission, or if an extraction operation has been performed. The anterior capsule is always folded back and attached behind the iris, either to fibrous tissue or by it to the clear posterior capsule inclosing within this outer capsular ring some of the lens fibers. These lens-fiber remnants and the cubical epithelium of the anterior capsule sometimes proliferate, irregular new lens fibers sometimes form, and even new cuticular membranes are deposited on the anterior or posterior capsule or both. Sometimes a layer of tough fibrous tissue is also formed, being deposited on the posterior capsule by fibroblasts from the iris. With the exception of a thin transparent capsule, any or all of these formations behind the pupillary area blur the vision and an operation is usually indicated if the vision be less than 20/50. The advisability of an operation would depend on several factors:

1. Age and health of the patient. Extreme age and poor health prohibit operation unless the vision is very poor. Youth demands operation if other factors do not contraindicate.

2. The occupation of the patient. Unskilled laborers do not re-

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* Read before the Ophthalmological and the Otolaryngological Section of the Cleveland Acad. of Med., Nov. 24, 1905.

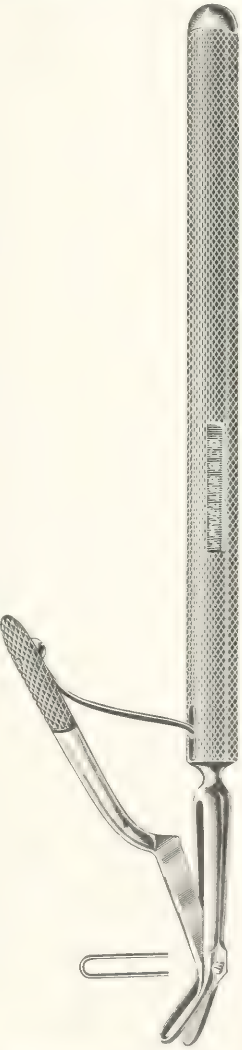
[1] Parsons: Pathology of the Eye, Vol. II.

quire operation, unless their vision be very defective, 20/100 or worse. Skilled artisans and professional men require the best vision obtainable.

3. The condition of the other eye. If the vision of the other eye is as good as the patient requires, operation is usually unnecessary. If the other eye is defective, operation is more likely to be advisable.

4. Diseased conditions of the eye or surrounding parts. The presence of glaucoma, fluid vitreous, retinal or chorioidal disease, conjunctivitis, dacryocystitis, etc., more or less contraindicates operation.

It is necessary to choose the kind of operation, if one is thought to be advisable. Very thin filmy membranes without strong bands across the pupillary area through which a good reflex may be obtained by the ophthalmoscope and which can be merely seen by the oblique light may usually be successfully operated upon by needling or discission. This operation generally makes a sufficiently large opening in the membrane for good vision, and there is usually only slight reaction with little danger of infection; besides, if care be exercised, the iris need not be wounded by the needle and, therefore, very little fibrous tissue will be formed. However, if the membrane is thick and crossed with strong fibrous bands, great difficulty may be experienced in cutting it, even if two needles are opposed to each other so as to prevent making dangerous traction on the suspensory ligament and uveal connections. In the effort to cut such membranes, the cornea and iris are often cut and pulled, the suspensory ligament ruptured and even sometimes the ciliary body so injured as to cause severe inflammation. Even if a small hole is made in these membranes, the fibrin thrown out by the inflamed iris sometimes closes it.



Young people are frequently very sensitive as to the appearance of a white opacity in their pupil which is often very noticeable, and even if vision could be obtained through a small opening they would much prefer an operation, where, in addition, the membrane might be completely removed from the pupillary area and a good cosmetic result obtained. In closed pupil, after severe inflammations, viz., iritis or cyclitis following extraction of the lens, large areas of the iris may be completely removed by this instrument instead of by the ordinary means of doing an iritoectomy or iridotomy. Persistent pupillary membranes may also be removed if care is exercised not to injure the lens.

For the removal of these membranes, the instrument illustrated in the accompanying cut was suggested to me by the use of a somewhat similar instrument devised by Krüger-Krjukow. I think my instrument preferable for the following reasons:

1. It is held like a pen or pencil, the index finger resting on the small lever, making it very much more easy to manipulate than the other instrument, in which the thumb rests from below on the lever, causing the hand to be in an awkward, unnatural position.

2. The large corrugated handle makes this instrument much easier to manipulate than the other, which has a smooth handle, especially slippery when wet with some solution.

3. The small inner portion of the punch is introduced through the opening in the capsule or iris, instead of the large outer portion, as is done with the other instrument, thus requiring a much smaller preliminary opening in the capsule.

4. There is no long-pointed extremity on the outer cutting portion of my instrument, which makes it very much easier to introduce, since the blades need not be entered within the corneal incision before they can be separated so as to pass the smaller one through the opening in the capsule or membrane, which must be done with the other. It is also possible to remove portions of the capsule even beyond the pupil, as there is no projecting point to impinge upon structures on the opposite side. This point on the other instrument is not sufficiently sharp to be used in making an opening in the capsule, and, if used for this purpose, there would be great danger of rupturing the suspensory ligament or unduly pulling the ciliary body or iris. I find it much safer to make the opening in the capsule by a Graefe knife or keratome after first making a large peripheral corneoscleral section in the desired location, usually below.

5. Since the cutting portion which passes within the eyeball is much longer in my instrument, a large piece of the capsule extending completely across the pupil may be readily removed when necessary. This portion of the other instrument is much too short and if passed through a corneoscleral opening does not reach much

farther than the proximal side of the pupil, unless it is pushed so far as to fold the cornea upon it.

6. My instrument cuts from within outward, thus bringing the portion to be removed into the anterior chamber from which it may be readily extracted; in fact, it usually comes out with the instrument. The other instrument forces the cut portion into the vitreous, making it difficult or impossible to remove it.

7. The portion of capsule about to be removed by my instrument can be readily seen. This is not so with the other one.

In conclusion, this instrument may be used to remove completely large portions of capsular epithelial or fibrous membranes, as well as iris in closed pupil. In young people where traumatic cataracts cause annoyance by the white appearance in the pupil, a black pupil can be obtained by this instrument, which is often impossible by any other means. Often postpupillary membranes are too tough for needling, and during an attempt at such an operation there would be danger of tearing the suspensory ligament or causing uveitis.

This instrument must be properly and carefully made, having every portion of its cutting edge sufficiently sharp to cut shreds of cotton, in order that a clean piece of membrane may be removed. When cutting cleanly with no remaining tags, no tension is brought to bear on the suspensory ligament. Care should be exercised in preserving such an instrument; to cut paper or other hard substances destroys its sharpness.

ON INTRAOCULAR IRRIGATION.*

By J. A. Lippincott, M.D.

PITTSBURG, PA.

It not infrequently happens that the *raison d'être* of a paper lies in the discussion which follows it. It was in recognition of this fact rather than in the hope of presenting anything especially new or interesting on the subject of irrigation within the eyeball that I ventured to accept your chairman, Dr. Marple's invitation, the honor of which, needless to say, I deeply appreciate.

So far as known the first person to wash out the interior of the eye was Saint-Yves,[1] who as early as 1722 employed this procedure in hypopion.

Half a century later, viz., in 1773, Guérin,[2] and shortly afterwards Sommer,[3] removed cortical remains in cataract extraction by this method.

At the end of the eighteenth century Forlenze,[4] an Italian surgeon, devised a syringe for the purpose which was carefully graduated, thus enabling him to avoid introducing what he thought a dangerously large quantity of fluid into the eye.

During the first three-quarters of the nineteenth century intraocular lavage seems to have practically fallen into desuetude, although Maunoir,[5] in 1829, employed it to restore the curvature of the cornea when the latter remained inverted after the expulsion of the cataractous lens, and Heymann,[6] in 1864, recommended it as a means of clearing the anterior chamber of blood.

The renaissance of lavage for the removal of cataractous débris is due to McKeown of Belfast and Inouye of Japan. The former introduced the subject at the meeting of the British Medical Association at Belfast in 1884; and the latter in the same year published an account of the procedure in a report of his private clinic.

The infant, aroused in distant lands from its long trance, speedily returned to the country of its birth, and it has, up to the present, found in France its most numerous and enthusiastic sponsors, of whom Vacher,[7] and Panas,[8] were the first to welcome it. These were followed in France and elsewhere in Europe by Wicherkiewicz, Chodin, Fano, Terson, De Wecker, Grandclement, Chevallereau, Little, Swanzy, Chibret, and others, the latest advocates being Lagrange and Aubaret in the *Arch. d'Ophtal* for February of this year.

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* Read by invitation before the Ophthalmological Section of the New York Academy of Medicine, Nov. 20, 1904.

[1] Traité des maladies des yeux Paris, 1722. Quoted by Lagrange and Aubaret, Arch. d'Ophtal., February, 1905, p. 74.

[2] Magnus in Graefe's Archiv., 32.2.171.

[3] Id. loc. cit.

[4] Id. l. c., p. 173.

[5] Id. l. c., p. 171.

[6] Klin. Monatsbl, 1864, p. 305.

American literature on the subject until recently was scanty, consisting only of the articles by C. H. Williams[9] and myself.[10] In the last two or three years papers have been published by Reik,[11] Beard,[12] Ellett,[13] and Bulson,[14] and intraocular irrigation now counts among its adherents a quite respectable number of operators in this country.

As we have seen irrigation was first employed to remove collections of pus from the anterior chamber. This practice does not seem at any time to have had an extended vogue. Arlt[15] claims that is unnecessary and so in all probability it is in the majority of cases. In point of fact, the strides made in recent years in the treatment of hypopion make the incision itself in many cases superfluous; but nevertheless we occasionally find ourselves in the presence of conditions in which the syringe can give us effective aid, especially when a hypopion is complicated with the presence of a small non-metallic foreign body. In the extensive mining regions of the Pittsburg district hypopion ulcer from flying fragments of coal or shale is of frequent occurrence. If the foreign substance is small it has no great penetrating power and lodges either in the anterior chamber or in the lens. Surrounded as it is by tenacious pus it is frequently not visible after the incision. In such cases I have numbers of times found irrigation of great service in uncovering the foreign body.

The first case in which I syringed the interior of the eye was instructive from this point of view. A boy was struck with a splinter of wood in the right eye eight days before I saw him. Examination showed a deeply injected eyeball, hypopion and posterior synechia. Incision, escape of aqueous and some pus. Iridectomy was followed by oozing out of lens matter. By means of persistent use of an eye-dropper containing boric acid solution the pus from both aqueous chambers and the lens substance were pretty completely evacuated. Condensed electric light then revealed a minute particle of wood which was withdrawn with a smooth iris-forceps. No reaction. Result: Fingers dimly counted through an opaque capsule.[16]

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[7] Gaz. Hebdom. de méd. et de Chir., Sept. 4, 1885.

[8] Bull. de l'Acad. de Méd., Janvier, 1886.

[9] Jackson's Report of Trans. Amer. Oph. Soc., 1887. Ophthal. Review, vi, 263.

[10] Trans. Amer. Oph. Soc., 1889, p. 341. Trans. Pa. State Med. Assn., 1890, p. 165; Trans. Amer. Oph. Soc., 1891, p. 85; Oph. Rec., 1895, p. 379.

[11] Trans. Amer. Oph. Soc., 1903, p. 64.

[12] Ophthal. Record, April, 1905. Review of article by Lagrange in Arch. d'Ophtal.

[13] Id. March, 1905, p. 134.

[14] Jour. Amer. Med Assn., Sept. 23, 1905, p. 908.

[15] Græfe and Sæmisch, 1874, iii, 1, 369.

Even when no foreign body is present the syringe is useful in determining that fact, and altogether, in the light of a fair amount of experience with hypopion, I feel more comfortable in operating for this affection when the irrigator is ready for use.

But the chief purpose of the procedure we are considering is to reach a more perfect technique in the extraction of cataract. The direct and remote advantages of a properly conducted irrigation in this operation have been enumerated so frequently that I shall not dwell upon them in detail. They are, speaking generally, such as might *a priori* be expected to result from a prompt and usually thorough cleansing of the anterior and posterior chambers and the lips of the wound of cortical matter, blood, air bubbles, and shreds of capsule, by absolutely gentle means.

The direct results are very striking, often brilliant, and seldom fail to impress those who witness the method for the first time. In the first place it sometimes happens, as Dr. Allyn pointed out in the discussion of Dr. Reik's paper at the 1903 meeting of the American Ophthalmological Society, that the corneal incision is no sooner completed than the anterior chamber fills with blood, which obscures the field of operation and is difficult to expel by manipulation. Irrigation removes it instantaneously and completely, and so makes a precise cystotomy easy of accomplishment. Secondly, after syringing out the lenticular débris the pupil is unusually black and the sight correspondingly sharp, so that a state of hopefulness is engendered which is conducive to a happy result. Thirdly, under the mild influence of the irrigating stream the iris, which may have appeared in the wound simultaneously with the exit of the lens, quickly, and as it were, spontaneously, assumes its normal position. Fourthly, irrigation enables us to avoid a proceeding which does not appear to be in conformity with sound surgical principles, viz., the bruising and fretting of the wound edges involved in prolonged stroking of the cornea. Fifthly, as pointed out long ago by Maunoir, in those cases in which the cornea from lack of tone remains inverted after expulsion of the nucleus, irrigation promptly re-establishes the corneal dome, bringing the lips of the incision into proper apposition, and at the same time permitting of an immediate estimate of the vision.

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[16] This case was reported in my first article on irrigation. Trans. Amer Ophthal. Soc., for 1889.

The remote advantages are, however, much more important. Rapid union of the incision is favored by the accurate coaptation resulting from the restoration of the proper corneal curvature in the cases of inversion referred to, and in all cases from the perfect cleansing of the lips of the wound. Secondly, the tendency to prolapse of the iris is probably, as McKeown claims, diminished, although I can not speak from personal experience, my own belief being that the surest way to avoid prolapse or incarceration of the iris in the wound is to make a sphincterectomy. I think it has been demonstrated that after extraction with lavage capsular opacities are less frequent and, when present, are less dense owing to the more perfect toilet of the eye; so that the percentage of secondary operations necessary to secure reading vision is greatly reduced. Finally I am convinced that it diminishes the frequency and the severity of post-operative inflammations of the uveal tract through the comparatively complete elimination of material favorable to germ development, and through the speedy closure of the incision, which would naturally have the effect of giving increased protection against the entrance of germs from the conjunctival sac.

It goes without saying that irrigation is not demanded in all cases. It is unnecessary when the lens emerges in its capsule, or when, on examination, it is found to be intact. Irrigation is contraindicated in cases of actual or threatened escape of vitreous, the latter condition being shown by a sudden shallowing of the anterior chamber.

The effectiveness of intraocular lavage is best illustrated when the cortex is soft or unduly adherent to the capsule, as in traumatic cataract, in immature cataract, in the incompletely developed lenticular opacity which sometimes accompanies myopia with more or less extensive changes in the chorioid, and in high myopia, which is considered amenable to operation. In some, at least, of such conditions it has doubtless widened the scope of operative feasibility and opened the door of hope to a considerable number of unfortunates.

I do not intend to weary you with statistics in support of the claims just made. I have already presented an analytical account of 200 cases,[17] and Panas, McKeown, Reik, and others have published reports which, taken in the aggregate, are sufficiently extensive. Besides it is more than possible that in the last analysis the most instructive statistics are not other people's, but own own; and it is safe to say that the experience or observation of a few irrigations is more convincing than all the arguments in all the papers that have been written on the subject.

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[17] Trans. Amer. Ophthal. Soc., 1891, p. 85, and 1903, p. 76.

If it be granted that intraocular lavage is a desirable measure, we may properly devote a little time to the consideration of the solutions and instruments used in effecting it.

Confining ourselves to its later period, viz., during the last 21 years, irrigation has been practiced with one or another of three ends in view: antisepsis, pupillary contraction, and the mechanical removal of residual cortex; and the injection fluids employed have varied accordingly.

Panas, the apostle of antisepsis, at first used a solution of biniodide of mercury. The experiments of Bettremieux[18] on rabbits showed that mercurial solutions are apt to produce opacity of the cornea, and those of Nuel[19] that they disintegrate the endothelium of Descemet's membrane; and Panas was driven by some unfavorable experiences of his own to substitute boracic acid for the mercury. De Wecker, with a view to its effect on the iris, injected a solution of salicylate of eserin. McKeown, aiming solely at the removal of cataractous remains, used a physiological solution of salt.

The teachings of Panas and of De Wecker on this point never met with general acceptance. It is probable, even, as LaGrange and Aubaret assert,[20] that the adoption of intraocular lavage was delayed for years by the alcoholic, mercurial and other irritating solutions used by some of its advocates. However that may be, the physiologic salt solution is now almost universally employed.

The writers just mentioned have recommended a liquid made up to resemble the aqueous humor as closely as possible. It contains in 1,000 grams of water 6.89 grams of chlorid of sodium, 0.113 of chlorid of calcium and 0.221 of sulphate of potash. Certainly *laissez-faire* is not in harmony with the spirit of the twentieth century and there can be no objection to such reaching after perfection. I would merely observe that I have never seen the most microscopical sign of injury attributable to the physiologic salt solution, or even to the one-half of one per cent. boric acid solution which I used for several years.

Instruments.—The very numerous instruments which have been devised to irrigate the interior of the eyeball are of three general types: First, piston syringes; second, rubber ball syringes, and, third, gravity syringes. The first class is represented by the syringes of Forlenze, McKeown[21] (his second), Panas,[22] and the syringe with double canula of Aubaret. The second class is represented by the syringe of Wicherkiewicz, Terson, De Wecker and Clark of Columbus. The third, or gravity type, is represented by McKeown's first and third syringes, and the syringes of Inouye, Vacher, my own, and others.

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[18] Arch. d'Ophtal., vi, 277.

[19] Etude Experimentale, etc., Arch. d'Opht., ix, p. 439.

[20] Loc. Cit., p. 78.

The syringe devised by Williams, of Boston, constitutes a class by itself, the fluid being propelled from the reservoir by blowing through a rubber tube with a mouthpiece attachment.

In discussing the respective merits of these three types I may repeat from my first paper on irrigation, read at the 1889 meeting of the American Ophthalmological Society, the tests to which a perfect instrument ought to respond. First, It should be easily made and kept aseptic; second, it should always be ready for use; third, its ejecting force ought to be capable of being accurately estimated and regulated; fourth, it should not throw bubbles of air into the eye; fifth, it should be easily handled and its movements readily and absolutely controlled with one hand, the other being free for other purposes. Let us apply these principles seriatim.

1. *Asepticism.* All three types can be rendered aseptic by boiling. No other method is feasible. To trust, as Lagrange does, to an hour's immersion in formol solution 1 to 1000, is to lean on a broken reed. An infected próbe may be immersed in a solution 100 times that strength for twenty-four hours without being sterilized.[23]

After piston and rubber ball syringes are rendered sterile by boiling, they present difficulties in maintaining the aseptic condition. e. g., if they have to be refilled, impurities that may adhere to the tip may be drawn up into the body of the instrument. This back current happens in the case of the rubber ball syringe the moment expulsive pressure is relaxed. Reboiling, which would be awkward to say the least, in the middle of an operation, or even before a second or a third operation, is thus rendered necessary. The liability to contamination is peculiarly great in the Aubaret syringe, which is provided with a double canula, one tube for injection and the other for simultaneous aspiration of the fluid injected. The aspiration is effected by means of the vacuum created in the upper part of the barrel through the downward pressure of the piston. The Williams syringe, if I am right in supposing that the fluid is expelled by blowing into the reservoir, would appear to be, as regards asepsis, not entirely unobjectionable. On the other hand, syringes of the gravity type are easily made aseptic and they are easily kept so because they are filled at the top, and the stream always runs one way. There is no danger of a reversal of the current if the reservoir is held higher than the tip, or if a shut-off is used, and, therefore, there is no danger of contamination of the rubber tube or reservoir. Before proceeding to a second or third operation at the same sitting all that is necessary is to pass the tip a few times through the flame of a spirit lamp.

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[21] Annales d'Oculistique, xcix, p. 145.

[22] Arch. d'Ophtal., vi, 471.

[23] Knapp's Archives, 1898, p. 407.

2. *Readiness for Use.* Rubber ball and gravity syringes answer this test perfectly. Piston syringes on the other hand are apt to get out of order and can not be depended on when they are needed. The Panas syringe is furnished with an asbestos washer which should not be affected by boiling, but if a piston syringe is used at all it would probably be best to have the plunger, like the barrel, made of glass.

3. *Estimating and Regulating Force of Current.* In regard to this point there can be no comparison between piston and rubber ball syringes on the one hand and gravity syringes on the other. In using either of the former two the force, depending as it does on muscular contraction, can not be estimated except by its effect on the iris—in other words, after the ill effects of the high pressure, if such is used, have been produced. This difficulty is enhanced in the case of the piston syringe unless the piston works with a smoothness which is perhaps quite exceptional. On the other hand the force of the stream from a gravity syringe can be estimated and regulated with mathematical exactness by the height at which the reservoir is held. Besides, with a properly constructed gravity syringe the flow can be instantaneously stopped and the stream can be interrupted so as to pass into the eye *per saltum,* but always under the same pressure, a very useful mode of using the current when the cortical masses stubbornly stick to their recesses within the capsule. I may under this head properly refer once more to the double canula syringe of Aubaret. This instrument, like those of Forlenze and Chibret, was devised to prevent hypertension by what De Wecker calls tamponnement of the anterior chamber. Panas, also, faithful to his antiseptic standpoint, was opposed to the evacuation of cortical masses by injections *qui ne font que les refouler.*[24] The authors just mentioned occupy a foremost position in the domain of ocular surgery, but the long history of human progress copiously illustrates the propriety of the Horatian line *Addictus nullius jurare in verba magistri,* and I have demonstrated to my own satisfaction, at least, that there is no danger of

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[24] Quoted by Lagrange loc. cit., p. 77.

such increased tension from the use of a gravity syringe. The fluid escapes as readily as it enters if the incision be ordinarily large and if ordinary judgment is used. Even if the theory of the Aubaret syringe were correct, it is difficult to perceive how cortical masses of any size could engage in the opening of exit; and if they did, they would be apt to block the escape tube and so defeat the purpose of the instrument.

4. *Air Bubbles.* The rubber ball syringe is likely to throw air bubbles into the eye, because, unless the bulb is constantly and steadily compressed, there is always air in the tip. The other two types are free from this objection. I do not attach much importance to the matter of air-bubbles, because, if introduced, they can be removed by the irrigation stream with the greatest ease, especially if the eyeball is rotated into such a position that the incision is at the highest point of the globe.

5. *Ease of Handling and Control of the Instrument.* If the preceding consideration is comparatively unimportant, as much can not be said of the requirement that the syringe should be easily handled and its movements should be under complete control. A gravity syringe of any form, but especially one that is properly constructed, is in my judgment much more perfectly under control than either of the other types. This superiority is partly due to the fact that in using the former the surgeon has merely to *direct the stream,* while in using the others he has also at the same time to *propel the liquid*; and in doing so involuntary irregular and jerky movements of the tip can scarcely be avoided. This is especially the case with piston syringes, because there is almost always some resistance to the downward pressure of the piston. The unsteadiness is aggravated by the distance between the fingers and the tip of the instrument, the arc for a given angle being proportional to the length of the radius.

Very early in my experience with intra-ocular irrigation I became convinced that an instrument of the type of the fountain syringe furnished with a handle made on the principle of the penholder would be the ideal irrigator. The penholder represents the final result of ages of groping for the best way of executing certain movements demanding precision. Moreover, every civilized child spends many laborious hours in learning how to use it. The correctness of my original conclusion has, I think, been verified during the past seventeen years. The perfect control ensured by the penholder handle utilizes all the dexterity of the most skillful surgeon, and minimizes instead of aggravating the deficiencies of those less gifted. This advantage is especially exemplified by the promptness with which the instrument can be withdrawn in those cases of sudden and unexpected movement of the eye which are sometimes so disconcerting. My irrigator, although modified in some details from its first form, is still a fountain syringe with a penholder handle which is tunnelled through its whole length to receive the rubber tube. Near the tip the latter runs over a rather sharp eminence and at this point is exposed, to allow of pressure by the index finger or by the horseshoe shut-off.

To sum up, piston and rubber ball syringes are defective as regards asepsis. Piston syringes are not always ready for use. In neither of these forms can the force of the stream be accurately estimated. The rubber ball syringe may throw bubbles of air into the eye. Both forms are difficult to manipulate with the precision required in all operations on the eye. Of the two the rubber ball syringe is on the whole decidedly the less objectionable. Finally a properly constructed gravity syringe fulfills all the conditions demanded.

My knowledge of other forms of the gravity syringe than my own is derived only from the published descriptions of them, and, therefore, I am not in a position to claim that mine, like Abou Ben Adam's name, "leads all the rest." I can, however, say that it has proved satisfactory not only to myself, but to numerous other operators.

In closing let me say a word or two in regard to the mode of using the gravity irrigator. The reservoir containing the physiological salt solution, at a temperature 3 or 4 degrees above that of the blood, to allow for cooling in the rubber tube, is held by an assistant, from 8 to 10 inches higher than the patient's face. After expulsion of the nucleus the shut-off is thrown back and the fluid allowed to flow until it is at blood-heat on emerging. Then the current is checked, but not completely stopped by pressure with the index finger and the tip is introduced within the lips of the wound. The pressure is now lessened or removed and the tip slowly moved from one end of the incision to the other. Sometimes the current drives the cortical masses round and round in the anterior chamber, and in that case the incision is gently opened by a lateral tilting of the handle. Sometimes in obstinate cases the tip is introduced farther so as to reach behind the iris, and it may be brought into contact with adhering lens matter, thus aiding the dislodging force of the stream. Usually the reservoir contains sufficient fluid, but if more is required the assistant, who always has a supply in reserve, can refill the instrument without in the slightest incommoding the operator. If desired, a larger reservoir can be supplied by Meyrowitz, the maker of the instrument.

EUPHTHALMIN CONJUNCTIVITIS.*

By Charles J. Kipp, M.D.

NEWARK, N. J.

Euphthalmin[1] I have used quite extensively in private practice as well as in the hospitals for the purpose of dilating the pupil sufficiently to make a satisfactory ophthalmoscopic examination. I have used one or two drops of a 5 per cent. solution for this purpose, usually but once, but in a few patients have repeated the instillation several times in the course of a year, and have never seen unpleasant results follow its use when applied in this manner. Recently I have had, however, a case in which the remedy was applied twice daily, continuously for four weeks, and in this instance a blepharo conjunctivitis was apparently produced by it. In no other case have I used the euphthalmin continuously for days.

The case is as follows: Mr. T. G. A., 75 years of age, was seen by me, for the first time, 5 years before this visit in 1905. His vision at that time was R. — M. 2, 5, D. S. 5/30. L. — M. 2 D., S. 5/40. In both eyes the anterior parts were healthy. The vitreous body was full of floating membranous opacities, the optic discs could only be made out with difficulty, but appeared normal. I did not see him again till Sept. 30, 1905. On this date I found that he had in both eyes an opacity in the center of the cornea which covered the pupillary area. The opacity was round in form and resembled the so-called ribbon-shaped opacity seen in eyes with deep-seated affections more than anything else. His vision was so greatly reduced that he had difficulty in finding his way. The tension of the eye was normal. To enable me to make an ophthalmoscopic examination, I put a drop of a 5 per cent. solution of euphthalmin in each eye, which had the desired effect. I found the vitreous body much clearer than at former visit and a very large ring of atrophy of the chorioid around the disc in both eyes. His vision was greatly improved with the moderately dilated pupil. It was now R. — M. 2, 5, D. 56/18. L. — M. 2, 5, D. S. 6/24. I prescribed for him euphthalmin hydrochlorid, in a 4 per cent. solution, and advised him to instill a drop in each eye morning and afternoon. Five weeks later he returned to me. In both eyes, both lids were very edematous, and in parts covered with dried crusts. There was much dried secretion among the ciliæ. The conjunctiva of the upper and lower lids of both eyes was swollen and covered with numerous enlarged follicles. The cornea was not affected. I learned from the patient that he had used the instillation for about four weeks before any unpleasant symptoms showed themselves; at that time swelling of the lids began, then eyes became somewhat painful and an abundant discharge of mucopurulent secretion followed. He attributed the new condition to the effects of the euphthalmin and stopped the instillations. In the course of a week the inflammation had greatly subsided, and, as he desired to see again as well as he had while using euphthalmin, concluded to resort to it again, but before doing so he prepared for himself a 2 per cent. solution by mixing equal quantities of boiled water, and of the 4 per cent. solution in another bottle. He again instilled a drop of this new solution twice daily for a few days, but had to give this up, as the swelling of the lids and the amount of secretion from the conjunctival sac had become much greater than it was ten days before.

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*Read by invitation before the Section of Ophthalmology, New York Academy of Medicine, Nov. 20, 1905.

[1] The hydrochlorid of (N) Methyl-vinyl-diacetone-alkamin-phenylglycolid, is a synthetic alkaloid that has chemically the same relation to Eucain B. as Homatropin has to Tropacocain, that is, Euphthalmin is the Hydrochlorid of the Mandelic acid derivative of Eucain B. Coblentz, "The Nearer Remedies, 1899."

Fearing that atropin had been substituted for the euphthalmin prescribed by me, I had him bring to me the bottle containing the solution he had used. The label showed that it had been prepared by a reputable apothecary, who, by the way, turned out to be a near relative of the patient. I visited the apothecary, saw my prescription (it called for euphthalmin hydrochlorid, gr. v. aquæ distill., dram ii), and also saw the vial from which the euphthalmin had been taken. The label on the vial was as follows: 1 gm. euphthalmin hydrochlorate, U. S. A. patent No. 663754, dated Dec. 11, 1900. E. Schering, manufacturing chemist, Berlin, Germany.

I also had a bacteriologic examination made of the solution used by my patient, and Dr. R. N. Conolly, who kindly made the examination, reported as follows:

"Examination of the eye solution received from you shows that it contained a common mould, mucor and a small bacillus, in shape and size resembling the colon bacillus, but it did not produce fermentation in glucose bouillon and consequently is not the colon bacillus. This bacillus does not resemble any of the pathogenic germs with which I am familiar, and so far have not been able to identify it. The above were the only micro-organisms found."

The facts here stated leave but little room for doubt that the conjunctivitis was caused by the euphthalmin and not by impurities contained in the solution.

It is well-known that solutions of atropin will, after prolonged application to the conjunctiva, in some persons, produce a conjunctivitis, with or without so-called granulations and a dermatitis of the lids, and I have seen the same follow the use of solutions of duboisin, eserin and cocain. (I have not yet seen a conjunctivitis follow the very prolonged use of strong solutions of pilocarpin hyrochlor.) Some writers hold that a conjunctival affection is never seen if the sterile solutions are used, but this is an error, as I have seen the same form of conjunctivitis and dermatitis develop in patients in hospitals in which the solutions were made fresh daily. Lewin and Guillery, in their recent exhaustive work, "Die Wirkungen von Arzneimitteln und Giften auf das Auge," vol I, page 198, after reviewing the whole literature on this subject express their opinion that the so-called atropin conjunctivitis is simply a drug eruption, the form of which is determined by locality, and that its development is solely dependent on an individual predisposition; they think that is conclusively proved by the fact that in many persons, thus stigmatized, similar changes in the conjunctiva are produced by the application of other trophinæ.[2]

I have no doubt that the above applies also to euphthalmin conjunctivitis.

The short duration of the mydriasis produced by euphthalmin, together with the high price of this drug in this country have probably prevented the extensive and protracted use in cases where permanent dilatation of the pupil is desired, and this may be the reason why a conjunctivitis from its use has not been more frequently observed.

The only mention of a conjunctival affection resulting from instillation of euphthalmin that I have been able to find in literature, is by Dr. H. Knapp, who, in the discussion following the reading of a paper by Dr. H. M. Starkey,[3] on the use of a mydriatic after the age of 45, stated that he had seen a case of atropin granulation develop after the daily use for six months of a solution of euphthalmin. No particulars are given. He stated that this case suggested to him the idea that euphthalmin was in all respects a weak atropin, but on using it in a patient with well marked idiosyncrasy against atropin it failed to produce erythema or any other irritation.

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[2] Tropinæ, that is, etherlike combinations of the tropins, scopolins, etc., with aromatic acids of the plant family of solanacæ and from artificial manufacture. Op. cit., p. 16.

[3] Transactions of the Section of Ophthalmology of the American Medical Association, 1902, p. 450.

In conclusion I may state that the conjunctivitis and dermatitis in my case disappeared entirely in the course of three weeks after discontinuance of the euphthalmin, under the use of weak solutions of zinc sulphate and zinc oxide ointment. During the last month he has been daily using a 1-2000 solution of scopalamin, which has thus far not produced conjunctivitis.

Abstracts from Recent Ophthalmic Literature.

AMBLYOPIA AND BLINDNESS.

THE NONTOXIC AMBLYOPIAS.—MOORE, T. W., Huntington, W. Va. (*Jour. A. M. A.*, Aug. 26, 1905), believes that the nontoxic amblyopias can be better studied if considered under the three following heads: 1. Cases of amblyopia exanopsia. 2. Hysterical amblyopias. 3. Anesthesia of the retina. He also mentions the group due to traumatism. Defective vision, the apparently normal fundus, the one eye squinting frequently, and the high refractive error in one or both eyes, usually renders the diagnosis of amblyopia exanopsia easy. He has tried many numerous treatments, as covering the good eye for one or two hours daily, the use of the amblyoscope, etc., but has found the convex glass cure the most satisfactory, and quotes Fronmuller's description of this method. Concentrically narrowed field of vision with reversal for colors is characteristic of hysterical amblyopia and exact perimetric measurements give valuable aid. He also calls attention to other constant symptoms usually manifested by hysterical subjects. The treatment consists in building up the patient's general health by cold baths, plenty of outdoor exercise, tonics, electricity, and the correction of any error of refraction. Anesthesia of the retina arises from an unknown cause or traumatism, and although some place the seat of the disease in the brain and not in the retina, he challenges this view. He describes these cases and reports one of what he believes to be traumatic anesthesia. His treatment of these anesthesias is by galvanic current, although the faradic and high frequency are equally as efficient. M. D. S.

CONGENITAL NIGHT-BLINDNESS WITHOUT VISIBLE OPHTHALMOSCOPIC CHANGES.—SINCLAIR, W. W., Ipswich, Eng. (*Ophthal. Review*, September, 1905). The writer calls attention to this condition and refers to the report of Leber, Nettleship, Morton and Thompson on this subject. These cases were characterized by congenital, stationary, night-blindness with inconspicuous fundus changes, consisting mainly of irregularity of the pigmented epithelium and the presence of scattered minute dots. All of Nettleship's cases were males; there was the history of heredity and the great majority inherited through the mother; almost all were myopic.

The writer gives the pedigree of a family affected with this disease, belonging to the group first described, but differing in (1) that females were affected as well as males; (2) that in neither of the two cases was there myopia; (3) that the ophthalmoscopic appearances were perfectly normal, and (4) that where a father or mother was unaffected their children invariably escaped. In spite of normal vision and field in ordinary light there was night-blindness to such a degree that the patients were unable to go out alone after dark; there was marked reduction in field with markedly diminished illumination and great defect in light sense.

The night-blindness was congenital and non-progressive; there was no consanguinity and no associated deafness or other defects, either physical or mental; the patients were in good health. The affection was traced back for five generations. The meaning of such a condition must be quite uncertain, but seems best explained as an inherited diminution in the photo-chemical activity of the retina. C. H. M.

ANOMALIES.

A CASE OF BILATERAL ANOPHTHALMOS.—OVIO (*La Clinica Oculista,* October, 1905). An infant, born at term, died a few days later. The macroscopic examination showed lids regularly formed, but sunken in as after enucleation. The palpebral cleft was a little smaller than normal, having an aperture of 16 mm. On opening the lids the ocular mucosa was seen forming a sort of funnel towards the interior of the orbit. The lachrymal puncta were in the normal position. There was no trace of globes either in the form of nodules or as pigmented spots. The body of the child was normal. Microscopically the ocular contents showed the presence of various motor muscles, well developed, and of numerous glands imbedded in an abundant connective tissue. To be more exact, a vertical section through the orbit presented the following structures, viz., superior and inferior lids, tubulous glands of Krause, lobules of the lachrymal gland separated from each other by the arrest of development, the orbital palpebral aponeurosis, Tenon's aponeurosis in which there were the tendons of the straight muscles, the oblique superior and inferior and the elevator of the upper lid. The brain was a little smaller than normal, but of regular form. The convolutions had their ordinary formation. Separating carefully the brain from the cranial base, it was found that the optic nerve, the optic tract and the external geniculate ganglion were missing. The chiasm was wanting completely, and in the neighborhood of the sella turcica there was a loose, fibrous fetal pigment spots, or those acquired in the first periods of life, tissue which showed vaguely the direction assumed by the optic tract and which passed into the optic foramen, as did the ophthalmic artery, which was larger than normal. Hippel, in Graefe-Saemisch, reported 87 cases of anophthalmos found in the literature, but he included in these, cases of micropthalmos of moderate degree. Such cases have been the subject of much discussion. It was primarily thought that they depended upon a real want of development. Manz advanced the theory that they were simply an arrest in development due to a local pathologic condition. In Hess' case the anomaly seemed to be due to an inflammatory process. The author's case showed no inflammatory products in the tissue which made up the contents of the orbit. It probably treated of an abnormal development beginning in the first period of embryonic formation—the first ten days of life—that is, in the moment in which the anterior brain presents the lateral ectasiae which make up the ocular infundibula. This ectasia did not take place, and hence the development of the parts which are the direct consequences of this—secondary optic vesicle, optic nerve, etc.—were not formed. R. H. J.

ABLEPHARIA PARTIALIS OF THE UPPER EYELIDS.—FOX, L. WEBSTER, Philadelphia. (*Annals of Ophthalmology*, July, 1905.) The patient was a male child, 5 months old. Examination revealed an entire absence of both eyebrows, although the orbital ridges were fully formed. The skin was continuous from the forehead over the ridges, and in place of the normal eyelids it was prolonged into two pointed flaps, the apices of which were adherent, one to each cornea, and fused with the cornea and conjunctiva, a condition not unlike symblepharon. In one lid a vestige of cartilage could be felt. Presumably there was no lacrimal gland, as crying produced no enlargements of the skin folds. There were no lacrimal canals, and the eyeballs were in a condition of xerosis. The corneas presented the appearance of maculas, such as follow ophthalmia neonatorum. In one eye there was a partial area of clear cornea near the lower border. The child seemed to have perception of light. At birth the eyes of the infant were affected with some inflammatory condition, the nature of which it was difficult to determine. This subsided within a few days, after which the present condition was observed by the mother. The family history was negative. A search of the literature shows the condition to be very rare. Goldzieher thinks that intra-uterine inflammation must be at the root of the changes in the eyeball, since no arrest of development could account for the cicatricial tissue and adhesions. M. B.

DOUBLE COLOBOMA OF THE LENS, WITH REPORT OF A CASE.—AYRES, S. C., Cincinnati (*Lancet-Clinic*, July 15, 1905), reviews the published literature of coloboma of the lens and gives the clinical findings in a case occurring in his practice in which there was a double coloboma in the periphery of the right lens, the upper coloboma being in the outer and upper quadrant and the lower being in the outer and lower quadrant. The article is illustrated.

W. R. M.

A Case of Symmetrical Congenital Absence of Chorioid and Retina Except in the Macular Area.—Landman, Otto, Toledo, Ohio (*Archives of Ophthal.,* September, 1905), gives its clinical history and ophthalmoscopic findings in a case of congenital absence of the chorioid and retina except in macular region. The visual fields showed an irregular concentric contraction to about 3 degrees. V. O. D. = 6/8, with correcting lenses, V. O. S. = 6/18. Ophthalmoscopic examination showed an absence of chorioid and chorioidal vessels; a small retinal area in the macular region; an undeveloped vein and central artery which did not supply the macular area, this area being supplied by branches of the short posterior ciliary artery; no posterior ciliary or long posterior ciliary arteries within the bulbus; an anomalous state of the vorticose veins; a normal ciliary body and iris supplied by the anterior ciliary arteries, and a normal vitreous and lens. W. R. M.

Excessive Pigmentations of the Human Eye.—Schein, Albert. (From the eye clinic of Prof. E. Fuchs, Wien, *Beitrag zur Augenh.,* 1905, No. 64, p. 249.) Excessive pigmentations of the human eye are not very frequent. The most common pigment anomaly is the different coloration of both ires. If one eye shows lack of pigment (blue iris) it is generally diseased, from cataract, cyclitis with deposits on Descemet's membrane. The darker eye (brown iris) is to be considered excessively pigmented if sclera and fundus show particular pigmentation. Schein reports 4 such cases, in 3 of which the sclera, iris, conjunctiva, chorioid (intervascular spaces) and pigment epithelium showed the excesses. The third case of a melanosis scleræ et hemimelanosis faciei has only one analogue in literature in the case of Talko, in which also a black discoloration of the soft meninges was observed. The most frequent are the pigmentations of the conjunctiva, giving the characteristic structure of a pigmented naevus, as in the fourth case of Schein, viz.: under the epithelium, in the form of processes toward the stroma, in the conjunctival tissue.

Generally these excessive pigmentations are considered congenital. Since, however, they never have been described in the newborn, and normal pigmentation of the iris develops in the first 2 or 3 years of life, or the skin of the negro from the sixth week on, or gradually increase in size and color, Schein is inclined to surmise that probably the excessive pigmentations of the eye do not exist, or show only traces, at birth and assume more intense forms in the course of years. C. Z.

BACTERIOLOGY.

Eye Infection, Second Hundred Cases with Bacteriologic Examination.—Smith, Dorland, Bridgeport, Conn. (*Archives of Ophthal.,* September, 1905), reports the results of bacteriologic examinations in a second series of one hundred cases of infection of the eye and mentions the therapeutic agents most effective in the treatment of the various forms of infection.

Of sixty-five cases of conjunctival infection, fourteen were caused by staphylococcus, twelve by pneumococcus, six by the gonococcus, six by the diplobacillus. In the remaining twenty-seven cases no one organism was especially prominent. Of the ten corneal cases, the streptococcus was found in four, the staphylococcus aureus in two. Of ten lacrimal cases the pneumococci and streptococci were found in seven. In ten cases no organisms were found.

W. R. M.

Panophthalmitis Due to the Bacillus Subtilis.—Polatti, A. (*Annali di Ottalmologia,* 1905, pages 57-73). Some writers have regarded the *Bacillus subtilis* as a harmless saprophyte, but Polatti presents evidence to the contrary. A description of considerable experimental research by him proves that, under certain circumstances, this bacillus can acquire pathogenic properties. He reviews the morphologic and biologic properties of this germ and relates a number of clinical and experimental experiences which establish the fact that the *Bacillus subtilis* from the soil has an unmistakably pathogenic action when it penetrates into the vitreous body. He introduced cultures into the vitreous body of rabbits, as well as foreign bodies artificially infected with the bacillus. In another series of experiments he introduced the cultures and foreign bodies into the anterior chamber. C. A. W.

A Rare Bacteriologic Finding in Ulcus Serpens.—Nedden, Bonn (*Arch. f. Augenheilk.,* v, lii, No. ii), reports two cases of ulcus serpens in which the infection was due to a micro-organism of the hay bacillus group, and a third case in which it was due to the streptococcus. In none of the cases was the pneumococcus present.

W. Z.

CATARACT.

Cataract Developing After Convulsive Seizures.—Zirm, Olmuth (*Arch. f. Augenheilk.,* v. lii, No. ii), has observed, within four months, six cases of cataract developing after cataract seizures. The first four cases presented striking similarities. They occurred in young healthy women between the ages of 26 and 28 who never had had any eye affection or general disease of traumatic, diabetic or hereditary origin. All had previously had good vision and there was no family history of cataract. All had had debilitating affections (three parturition, one typhoid), following which they lost their hair and nails. All had had convulsions, undoubtedly of tetanic nature. It was peculiar that all of the trophic changes noted affected epithelial structures (skin, hair, nails and lens), and especially remarkable was a pemphigus-like outbreak, with subsequent pigment changes in one case. The fifth case occurred in a 22-year-old, hard-working man, who also had had complete alopecia. His mother had suffered with convulsions. In this case the opacity of the lens differed from that seen in the women, it being in the periphery and apparently of a more stationary character, whereas in the women the lenses were nearly or quite opaque. The sixth case occurred in a woman, 41 years of age, who, during her six previous confinements, had had convulsions, followed by loss of the hair and nails. The author suggests that perhaps further observation will demonstrate that it is those cases of convulsive attacks leading to trophic disturbances of the skin and its appendages which predispose to cataract formation. W. Z.

A CASE OF CATARACTA PUNCTATA CAERULEA.—DIEDRICHS, Bonn, (*Woch. f. Therap. u. Hyg. des Aug.*, No. 38, 1905), saw this condition in the left eye of an old man. The opacities which were in the anterior capsule were of a changing blue—from forget-me-not to marine. By oblique light, especially, they presented a beautiful picture. The derivation of the color is still in doubt. W. Z.

OPACITIES OF THE POSTERIOR CAPSULE AFTER OPERATION FOR CATARACT.—FERNANDEZ, J. SANTOS, Havana (*Archivos de Oftalmologia,* October, 1905). After having met with fatal accidents, generally a detached retina, in several cases of discission, with either one or two needles, Fernandez discontinued the operation entirely for a number of years. Recently, however, he was again lead to interfere in secondary cataract, using, however, a von Graefe knife in preference to needles, avoiding in this way the tearing or dragging on the membrane, as well as the pressure and consequent disturbance or stirring up of the vitreous. He used a very sharp and thin knife and reports good results, free from complications, in several instances. H. M. F.

Capsular Complications After Cataract Extraction.—Collins, E. Treacher, London (*Brit. Med. Jour.*, Aug. 26, 1905). The writer discusses these complications under two headings: (1) Those resulting from adhesion of the capsule to the extraction scar, and (2) those resulting from opacity occurring in connection with it.

In the first class of cases, the capsule may be entangled in the extraction wound or it may be agglutinated to it by inflammatory exudate. The former condition is the more serious, since firm healing of the scar was indefinitely delayed and the capsule acts as a foreign body; severe iridocyclitis and sympathetic ophthalmitis are apt to be excited, and the delayed healing of the wound increased the liability of infection from the conjunctival sac.

Adhesion of the capsule to the wound without incarceration is less serious; it does not delay healing of the wound, but has a great tendency to draw the capsule and iris forward and tends to close the angle of the anterior chamber and to produce glaucoma; this complication is not avoided by the existence of an iridectomy, since the angle of the anterior chamber near the scar is closed by a stump of the root of the iris or by the most anterior of the ciliary processes which is held or drawn forward by the adherent capsule. Not all such cases produce these disastrous results. Sometimes tension is not produced until after the needling due to a fresh adhesion of the capsule to the needle puncture or to congestion of the ciliary processes.

The operation of extraction without iridectomy was less liable to lead to adhesion of the capsule to the wound than if an iridectomy was done; however, neither was completely free from the risk. If a piece of the anterior capsule be torn away with forceps, this risk of adhesion is less than if it be only incised with a cystotome, but the adhesion of the peripheral portion of the capsule is still possible. Sclerotomy, paracentesis, and needling of capsule have all been tried for the relief of tension, but they nearly always fail, for the angle of the chamber remains blocked as before. An iridectomy, if performed on the opposite side to the first one, may open up the angle, but is not certain of doing so and leaves an unsightly pupil. In two cases the author had been able to relieve the tension by dividing the capsule in the same way as an anterior synechia of the iris is divided with Lang's knives.

Opacity of the lens capsule may be due to (1) retained lens substance, (2) wrinkling of the anterior capsule with new growth of cells lining it, and (3) adventitious fibrous tissue. The most efficient way to prevent the first two is to tear away the anterior capsule with a pair of capsule forceps, instead of simply incising it with cystotome, as is the more common practice. The development of adventitious fibrous tissue is usually the result of iridocyclitis, or sometimes the organization of a blood clot on the capsule may produce it.

In 1899 the author determined to remove the anterior capsule in 100 cases of uncomplicated senile cataract with forceps and to compare these results with those in which the capsule was simply incised. As a rule, he considered needling necessary when the vision was below 6/18. Of his first 100 cases in which the forceps were used, only 15 required subsequent needling, and no case required a second needling; while in the second series of 100 cases, 4 only required needling, and a period of two years has now elapsed since this second series was completed. As the result of this experience of this method of removing the anterior capsule, he found 25 per cent. of his cases got full vision = 6/6 with only the single operation; he much doubts if any other procedure would produce such good results. C. H. M.

ZONULAR CATARACT, WITH IRIDEREMIA. EXTRACTION OF THE LENS, WHICH HAD BECOME ENTIRELY OPAQUE, IN THE CAPSULE, WITH MICROSCOPIC EXAMINATION.—LEWIS, FRANK N., and THOMPSON, EDGAR S., New York (*Ophthalmic Record,* August, 1905). The patient was aged 44 years. He had always had very poor vision. No family history of cataract. Fifteen years ago vision of right eye became much worse, and eight years ago vision of left eye failed. At this time a doctor made a diagnosis of cataracts. Upon examination by the authors, it was found that the right eye contained a large, milky-white lens, with a dark-brown nucleus floating in it. In the left eye the cataract was of darker color and apparently of firm consistency, with many irregular, dense, opaque spots. Size about normal. Light perception in all parts of the field good. There was complete irideremia in both eyes. The left lens was extracted by removing it in its capsule. Some vitreous lost. Healing was uninterrupted, except for a slight vitreous protrusion from the wound on the seventh day, which subsided under bandaging. Vision of 20/100 with + 14.00 D. Sixteen days after the first operation the right eye was operated upon. As the section was completed the patient squeezed his eye and ruptured the capsule, causing the nucleus with the surrounding fluid to escape. The capsules were not removed. Healing was uneventful. Vision resulting in 2/200 without needling.

The pathologic report of the left lens shows that the lens was removed in its capsule. The entire lens had undergone cataractous degeneration, though of very different degrees in different parts. Midway between the lens center and the capsule was a zone of advanced degeneration, with marked separation of the fibers, extending all around the nucleus. The separations were filled with granular detritus and areas of closely packed spheres of Morgagni. Immediately beneath the capsule the cortex was converted into a pultaceous mass. There was a second "zonular" area deeper in, and the nucleus was sclerosed and split by a three-armed fissure. From the larger zonular area to the capsule, radii of more advanced degeneration extended on all sides, about twelve in all. Zonular cataract with radii are considered by most authors a rarity. M. B.

THE DEVELOPMENT OF LAMELLAR CATARACT.—GRIMSDALE, H. B., London. (*The Ophthalmoscope,* August, 1905.) The author supports the view against the congenital origin of lamellar cataract, and cites the case seen by De Wecker in 1866, which was that of a child of 9 years with beginning lamellar cataract in one eye, the fellow eye having no lenticular opacity. Ten months later the child was seen again, when it was found that the lamellar cataract had advanced and that the formerly clear lens in the fellow eye contained a rapidly-developing lamellar opacity. One case is reported by the author of a 3 years' child, seen in 1890, whose mother maintained that the child's vision had only been defective for a few months. A good reflex from each fundus was obtained, but no retinal details could be seen, nor could any lenticular or vitreous changes be made out to account for it. It was only by the catoptric test that he was able to determine lenticular changes. One lens was absorbed by needling, with good vision resulting with a clear view of fundus. The boy was not seen after this for two years, at which time it was found that the unoperated eye contained a well-marked typical zonular cataract, the margins of the lens being fairly clear allowing an incomplete view of fundus. The author concludes that this case of lamellar cataract could hardly have been congenital, as evidenced by the history, the absence of nystagmus and the changes in the lens after being first seen by the author.

M. B.

THE LENS-CAPSULE IN THE OPERATION FOR CATARACT.—KNAPP, HERMANN, New York (*Amer. Jour. of Ophthal.,* September, 1905). The writer refers to the recent discussion on this topic at the 1905 meeting of the Ophthalmic Section of the British Medical Association introduced by E. Treacher Collins (abstract in this number of OPHTHALMOLOGY), in which the difficulties are described under two heads: 1. By entering the section wound, retarding closure, causing an uneven, irritable scar, leading to kerato-iridocyclitis and finally developing into chronic seroplastic uveitis, with blindness of the operated eye and sympathetic ophthalmitis of the other, and, second, by opacifying *in loco.*

He then takes up the question: How is this condition to be avoided, if it can not be cured? He considers sympathetic ophthalmitis much rarer in simple flap operations than in the combined method; since adopting the method of opening the capsule peripherally and parallel to the corneal section and omitting iridectomy the writer has not seen a trace of sympathetic ophthalmitis.

The other methods of opening the capsule which Knapp considers do not give so much protection from incarceration are then discussed. He takes exception to the method recommended by Herbert—by a vertical slit from the lower point of the pupil to the upper—a method known long ago as unfavorable for the exit of the lens and because it produces a more or less dense scar which is much in the way of light and which is very unpleasant to divide by a later capsulotomy.

Next he refers to Graefe's method—a broad T-shaped opening which did not always remain open; also to the "scratching" of the center of the anterior capsule in different directions with a cystotome—the general method of Arlt and many others 40 to 70 years ago; the small shreds thus created come in contact with tiny, irregular ruptures of the iris made during the passage of the lens and thus agglutinations take place.

Tearing a central leaflet from the anterior capsule is considered very commendable. "If in the combined operation the capsule is removed, success is almost certain, provided there are no complications on the part of the eye and no coarse technical faults. Yet there are also difficulties in the removal of the central part of the anterior capsule. It is mostly done with a capsule forceps, the teeth of which are sharp and bent somewhat backward. The accidents to which this is open are chiefly the dislocation of the lens with prolapse of the vitreous and its consequences. Hard capsules do not yield, so that the whole cataract comes out with the capsule, which, as a rule, gives excellent results. Another drawback inherent to this method is the necessity of an excision of a piece of iris; otherwise it is too hazardous to manipulate in the narrow pupillary space. I have devised a peculiar capsule forceps (about twenty years ago), according to the principle of the nautical grapple-hook. When the branches of the forceps are opened their claws are directed obliquely toward the capsule, and when the forceps closes it grasps the central part of the iris and removes it when it is withdrawn. I have not used this forceps so much as I might have. The reason was that the tearing of this piece of capsule may dislocate the lens and leads to prolapse of vitreous when the lens is expelled. Apart from that it produces not a permanent clear way for the passage of the rays of light, as the anterior capsule will opacify, too, by wringling and dotting, so that the patients who had very good sight in the first three to six months notice, without pain or discomfort, a gradual deterioration of sight, which, however, can be permanently corrected by a second discission."

The writer recommends the peripheric opening of the capsule very strongly; it permits the easiest escape of the iris; leaves a fine scar near the upper margin of the capsule; the latter is left intact in all other parts and is more favorable for a secondary splitting with a sharp, well-proportioned knife-needle; the ultimate results are ideal even after a great many years; the small tears in the iris and the capsule wound do not meet, but close separately; hence, there are very few or no synechiæ and an ideal pupil results; when this peripheral opening is correctly done there are prolapses of the iris which are cut the day after the night in which they occur (mostly the first night), with a resulting easy and clean coloboma.

C. H. M.

Iridotomy in Secondary Cataracts.—Girard. (*Revue Generale d'Ophtalmologie,* Oct. 31, 1905.) The author states that it can be said without fear of contradiction that the extraction of cataract, even when correctly executed, fills but rarely the full object of the operation. It is not possible to realize in the majority of cases the effect of the ablation of the apparatus of the lens. Nor is it always possible to remove all fragments of cortex and capsule. It is these latter elements for new opacities of varying degree which occupy the field made clear by the removal of the lens and produce secondary cataract, and for which divers procedures for their removal have been urged. But the veil can thicken after the extraction and the exudation increase from iritic addition to the exudate. The iris will become adherent to the membranous exudate and finally form an impenetrable film for vision. Still it is possible to relieve this condition. It would seem that there is no involvement of the ciliary body, chorioid or vitreous, from the inflamed iris, and this is due to the modernization of the extraction now made under preventive aseptic conditions. The retractility of the iridocapsular screen is favorable to operative interference when the secondary opacity is recent and the iris is not atrophied.

An unfavorable condition is the lessened resistance to a sufficient degree in spite of the continuous tissue of the muscular bed. Attacked by a cutting instrument, it will give way before suffering incision.

The author asks: What are the operative resources for removing the effect of the secondary cataract? Iridectomy, that admirable operation which we owe to Wenzel, the author considered dangerous here. The rational procedure, Dor believes to be an iridocapsulotomy. Graefe was the first to practice it according to the old method of making an artificial pupil when iridectomy was given up. Iridectomy had been abandoned in the eighteenth century. Graefe perforated the partition, plunging deliberately through it with spatule-like, double-edge knife. This injured the iris and pushed it back, and at the same time interfered with the vitreous body. The example, however, resulted in happy developments in the perfection of instruments. Kruger came forward with his "emport piece," which was voluminous and of uncertain power. De Wecker substituted his pince cisseaux, which, when used with dexterity, gave perfect results. The chief difficulty, however, is in placing the instrument. Sichel fils, believed that the Graefe operation could be improved by the use of simpler instruments, hence the iridotome of that author and his iridotomy.

Girard proposes a two-pronged fork, the prongs slightly curved, to support the iris, and he enters the instrument at the nasal side, parallel with the iris, the points being directed forward. The fixation forceps is now removed and a Sichel iridotome is introduced from the temporal side of the cornea, and the occluding membranes are divided between the prongs of the little fork.

Girard goes over in his paper the conditions which result in pupillary occlusion after cataract extraction, and also reviews the various operations for relieving this condition. B. E. F.

CHORIOID.

A Case of Tubercle of the Chorioid, Presenting Certain Clinical and Pathologic Peculiarities.—Carpenter, George, and Stephenson, Sidney., London, Eng. (*The Ophthalmoscope,* August, 1905). Ada S., 3 years, was admitted to the Northeastern Hospital for Children, London, on July 23, 1903, suffering from "bronchitis and convulsions." There were a few bronchia at the base of each lung and a slight cough. Night temperature rises to 102° and 103° F. Pulse, 100 to 160; respirations, 36 per minute. Beyond these symptoms there was little to guide to a diagnosis of tubercular meningitis, except the appearance of the eye grounds.

In this case each fundus oculi contains numerous fawn-colored tubercles, ranging in size from a disc diameter to one-third this size. They are confined largely to the central region and are about twelve in number in each eye. On the strength of the eye examination, a diagnosis was made of acute miliary tuberculosis, and the child died in a few days' time. An autopsy was performed and the diagnosis verified. The authors conclude that the ophthalmoscopic evidence enabled a positive diagnosis to be made of miliary tuberculosis when the other symptoms alone would have been insufficient. Further, that in 50 per cent. of these cases there will be positive evidences ophthalmoscopically. The case presents two peculiarities, viz., a clinical and a pathologic one. The usual clinical picture of acute tubercle of the chorioid is that of one to three fawn-colored areas and not sensibly raised and limited to one eye. In this case the deposits are in both eyes, are multiple, raised and of unusually large size. The pathologic peculiarity is that usually the tubercle does not invade the retina, while in this case, as evidenced by the photomicrographs presented, there is distinct retinal invasion. M. B.

Anatomic and Pathologic Alterations in Suppurative Chorioiditis of Slow Course.—Stefano (*Annali di Ottalmologia,* xxxiv, Nos. 5 and 6, 1905). At the first examination the left eye showed great exophthalmos. Enucleation with exenteration of part of the orbital tissue was performed. The histologic examination showed in the cornea a large ulcer with sinuous borders, which was the beginning of the infection. The borders and base of the ulcer were infiltrated and covered with an exudate and degenerated corpuscles. Bowman's membrane was wanting. The cornea in its entire thickness was infiltrated and rich in new-formed vessels. Descemet's membrane, together with the posterior epithelial layer, was destroyed. The anterior chamber was absent. The anterior layer of the iris, the anterior basal membrane, the iris stroma, the fibers of the sphincter, the posterior basal membrane with the posterior epithelial layer could nowhere be recognized as such and one could see only the disintegrated pigment of the iris in the deep layers of the cornea. The canal of Schlemm, the spaces of Fontana and the ciliary processes were all destroyed. The form of the lens was altered from the pressure of pus behind. Anteriorly the transparency of the lens was wanting; the nucleus was normal. No trace remained of the zonule of Zinn. The vitreous was filled with pus from the internal layer of the chorioid. Next to this layer was a massive, small-cell infiltration of recent formation. Anteriorly there were no traces of the retina; posteriorly, in the neighborhood of the optic nerve, the internal and external granular layers were distinct, both infiltrated with young elements. Between these layers and the chorioid was a new, loose, cementing tissue. At certain points hemorrhages could be seen in and beneath the retina. The papilla was edematous and infiltrated. The central artery presented an obliterating endarteritis. The volume of the nerve was normal. The connective tissue of the septum was substituted by a small-cell infiltration. The pia was disintegrated and its endothelium infiltrated. The arachnoid space was dilated. The dura was also infiltrated. The chorioid presented the greatest alterations. The ciliary processes were completely deformed and compressed between the scleral tissue and mass of suppuration in the eye. The layer of small vessels was infiltrated, but in some places still recognizable, as was the layer of large vessels. The pigment was scarce. In the equatorial region there remained slight traces of normal elements; the chorioid was reduced to an irregular layer of pigment. The remainder of this layer was disintegrated and infiltrated. The sclera was invaded by the diseased process. The conjunctiva was greatly thickened. There were new-formed capillaries. The vessels were dilated and surrounded by masses of infiltration. The cellular tissue of the orbit was completely changed; macroscopically it resembled a compact, fleshy mass. The microscope revealed that at some places the normal tissue was preserved, but generally substituted by a compact connective tissue. No bacteria were found. R. H. J.

CILIARY BODY.

CYCLITIS.—STRAUB (*Tydsch v. Geneesk.* Jan. 21, 1905), finds the separation of cases, which he considers as hyalitis from cyclitis, to be advantageous for study. Experimental study is also of importance. After infection of the ciliary body, a local infiltration is formed, the number of leucocytes increases, and in the excavation of the optic nerve and the surrounding retina an exudate appears. Straub found the first indication of Descemetitis after he had drawn a woollen thread infected with tubercle bacilli through a small part of the ciliary body. Cyclitis is doubtless accompanied often by descemetitis. However, sometimes it is found with iritis, and Straub found Descemetitis three times, with a small perforating corneal wound, where the margins of the wound were slightly infected, while the iris and ciliary body remained normal.

Iritis is mostly present, but for the study of the condition those cases are particularly valuable where the iris does not participate. The affection of the ciliary body is inaccessible for direct examination. The ciliary body may be held as the primary focus of the disease when inflammatory processes in all the surrounding tissues are found in the sclera above the corpus ciliare (scleritis), in the cornea, in the iris and in the anterior part of the chorioid. An infiltration of the ciliary body not rarely produces myopia through relaxation of the zonula. In the vitreous body slight opacities are seen directly before the optic nerve and the surrounding retina; sometimes they are so dense that an impression of papillitis is given. Here experimental and clinical cyclitis entirely harmonize. In most cases of cyclitis very tortuous veins are found in the retina.

Snellen does not think that Descemetitis always demonstrates cyclitis; the only proof would be that the pigment in these precipitations came from the uvea. This might be so, but it does not prove anything for cyclitis. He states that these precipitations take defined places; he thinks that the leucocytes are drawn there by bacteria lying primary on these places, which leucocytes transport the pigment they meet. He considers Descemetitis a disease *sui generis,* also because Descemetitis is not always connected with true cyclitis. As to the combination with the affection of the chorioid he thinks that chorioiditis always is combined with sympathetic cyclitis, but primarily, not secondary.

Nicolai did not understand the great value Straub attaches to the Descemetitis; the leucocytes on the optic nerve make no papillitis; they form only a depository; why can not the same be said of the leucocytes which land on Descemet's membrane?

Van Moll asked if a typical cyclitis be demonstrated, where larger filling of the retinal veins and peripherical chorioiditis was present, was the tension there lower? He remembers glaucoma with strongly filled retinal veins and chorioidal spots which was previously called serous chorioiditis; this should be a cyclitis.

Faber asked the causal connection between the cyclitic process and the strongly filled retinal veins.

Straub stated that, for the limited time, he only gave facts which had impressed him more particularly in studying some 45 cases of cyclitis. The causal connection between the strongly filled retinal veins and the cyclitis is perhaps pressure of the leucocytes, which gather in the sheaths of the veins of the optic nerve. Tortuous retinal veins alone do not diagnose cyclitis; stasis must be combined with other symptoms. He did not mention pain because he could give nothing new; the tension he did not mention on account of the limited time. He does not attach such a particular value to the descemetitis, although he finds it often; one will not understand cyclitis rightly before experimental cyclitis with Descemetitis is produced. He believes, also, that the leucocytes arrive at the membrana Descemetii through chemotaxis. The cyclitis makes slight changes in the cornea through which the leucocytes are attracted. Since he uses Berger's loupe and Auer-light he seldom misses the Descemetitis. In pure cyclitis only the ciliary body is affected, without iritis, chorioiditis, etc., as where a tubercle exists in the corpus ciliare. E. E. B.

CIRCULATION.

Intravitreous Hemorrhages.—Paton, Leslie, and Paramore, W. Erasmus, London. (*The Lancet, Oct.* 28, 1905.) The writers have investigated the rate of coagulation and the content of calcium salts of the blood of four patients who had suffered from intravitreous hemorrhages. As is well known, such hemorrhages occur not infrequently in young persons who are apparently in perfect health; the actual cause of the escape of blood from the vessels is unknown, but Wright's suggestion that it is due to thrombosis in some small vein seems most probable. The investigators found that in the cases examined the clotting point of the blood was too high as compared to the normal, and this fluid contained an excessive quantity of calcium salts. They argue from this that it is improper to give calcium salts in such cases and that, theoretically at least, the opposite direction should be aimed at by the exhibition of a decalcifying agent, such as citric acid. They refer to Wright's observations, that in typhoid fever when the content of the blood in lime salts was great and the coagulation time, therefore, rapid, thrombosis was common and was to a certain extent prevented by the exhibition of a decalcifying agent. C. H. M.

Spontaneous Intraocular Hemorrhage.—Motais, Angers (*L'Ophtalmologie Provinciale,* July, 1905). On June 7, 1905, Motais communicated to the Medical Society of Angers some of his experience with spontaneous intraocular hemorrhages—an experience which covered a period of more than twenty years—and included at least twenty-five cases. Some of the principal points touched upon by the author are that the pathogenesis is yet very obscure; in regard to age, contrary to the teaching of most authors, adolescence is far from being always a factor. (His twenty-five patients ranged from 10 to 45 years of age.) In reference to sex, with all authors, he agrees that spontaneous hemorrhage is rare in females; as to season, he found the condition to occur most frequently in the spring; as to temperament, he could not give any definite data, though the lymphatic subject is generally supposed to be the one which is predisposed to the condition; as to the relation of general disease, he has had, contrary to Abadie (who attributes an excessive rôle to vasodilation through the influence of the sympathetic), found that all of these diseases which cause degenerative changes in the walls of the blood vessels were the most frequent etiologic factors. He states that most writers mention the frequency of epistaxis as an accompaniment. In none of his cases was syphilis deemed a cause. As to the seat, first, he had found it in the capillaries of the chorioid; second, in the capillaries and small inosculations around the optic disc; third, in the branches of the central retinal vein, and, fourth, in the branches of the central retinal artery. In six of the twenty-five cases, the site of the hemorrhage was in the vicinity of the ora serrata. In the case of a diabetic patient, who had already been the victim of several hemorrhages in the left eye, he had had the opportunity of seeing, with the ophthalmoscope, the blood accumulate before his eyes. It was from the small vessels around the disc, and he was able to verify the mode of propagation, by way of the hyaloid canal, referred to by some authors. As to the onset, he had always found it sudden and without any prodromic signs. The invasion, by the blood, of the interior structures of the eye, he says, is less rapid in cases in which the hemorrhage is from the choriocapillaries; it is more rapid when it comes from the peripapillary vessels; and it is absolutely sudden when it is due to rupture of a branch of the central artery or veins. As to recurrence, he found that it is rarely that primary intraocular hemorrhage is not followed by recidivations. At least, he says, two years must elapse, with freedom from fresh hemorrhage, before a patient can be considered to possess an eye which is fairly safe. As to prognosis, he has determined that the peripapillary hemorrhage is the least grave, followed by the chorioidal, and, lastly, by that from the central vessels. He asserts that the more numerous and the more extensive the recidivations the graver becomes prognosis. Finally, as to treatment, he has tried all of the methods that had been proposed without any appreciable success. In two instances benefit ensued in consequence of an iridectomy for a secondary glaucoma which had supervened.

C. H. B.

OBSERVATIONS RELATIVE TO INTRAOCULAR HEMORRHAGE (IN YOUNG SUBJECTS).—CHEVALIER, MANS (*L'Ophtalmologie Provinciale,* June, 1905). In this communication by Chevalier some half a dozen articles since the important report of Abadie on intraocular hemorrhages in adolescents, presented to the French Ophthalmological Congress of 1898, are cited as dealing with this subject. Chevalier's interesting paper refers to a man of 34 years of age, who suffered from a spontaneous hemorrhage, first, in the left eye and, three years later, in the right, and whom the author had had under observation for a period of several years. The patient was of good habits, save that he smoked to excess. He was exceptionally robust until the age of 30, when he began to suffer with gastric indigestion, with sudden copious hemorrhages from the stomach, followed by blackish stools. The diagnosis made was that of simple ulcer of the stomach. Thirteen months later the hemorrhage in the left eye occurred. In spite of active treatment, the vision with that eye gradually declined. Hemorrhage in the right eye later appeared, at which time the author was consulted. The personal history and physical examination of the patient were negative save for the above troubles.

The chief points of interest concerned the left eye only, which was first affected. They consisted of three types of fundus lesions: 1. (a) Complete atrophy of the optic nerve; (b) a plaque of blood undergoing the transformations to which such character of hemorrhages are subject, and (c) a plaque of retinitis proliferans. The optic atrophy was attributed by the author to pressure from hypertension lasting for a relatively long period of time (really a hemorrhagic or a secondary glaucoma, he states). 2. The hemorrhagic plaque, which was situated below the papilla and was about two disc diameters in size, and which showed an obliterated artery projecting from each side, he believes, was doubtless the result of a rupture of the vessel. (It is noted that spontaneous hemorrhage from a retinal artery is extremely rare, such hemorrhage coming most often from the capillaries, and next in frequency, from the veins. 3. The plaque of so-called retinitis proliferans, which was located in the nasal half, was considered by the author as but a further transformation of another, and older, hemorrhage.

With regard to the pathogenesis of the hemorrhages, Chevalier is inclined to explain it after the manner in which Virchow accounted for mucous ulcer of the stomach, especially since this particular patient had also suffered from such an ulcer. This theory is as follows: A capillary is obliterated by an embolus; the death of the mucosa fed by this vessel ensues, and then destruction of the same by the gastric juice occurs, the crater form of the ulcer being but a reproduction of the affected arterial zone.

As to the ulterior cause, however, that which is behind these vascular disturbances, he asks, What is it? Abadie, he says, has advanced the theory that the point of departure of the affection is in the sympathetic system, and that the immediate cause of the rupture of the vessel wall is due to excessive vasodilation. The opinion most generally entertained, however, is that these forms of accident are the result, both directly and indirectly, of toxins—mostly of autotoxins: Directly, through the influence of the toxins upon the walls of the vessels, or, indirectly, through the production of an endovasculitis or a perivasculitis. C. H. B.

CONJUNCTIVA.

STAINING OF THE CONJUNCTIVA BY PROTARGOL.—SNELL, SIMEON, Sheffield, Eng. (*The Ophthalmoscope,* August, 1905.) Two cases are reported of argyrosis resulting from the use of protargol solutions of unknown strength for a period of two years in one case and five years in the other.

CONJUNCTIVITIS. — STIRLING, J. W. Address on Ophthalmology (*Montreal Medical Journal,* October, 1905). Conjunctivitis is one of the commonest eye diseases that confronts the specialists and general practitioners, yet in no other ocular disease has there been more room for advance, both in diagnosis and treatment. During the last few years new germs have been discovered by Koch, Weeks, Morax and Axenfeld; their relationship to certain forms of ocular disease has been worked out; the conditions especially favoring their development have been studied; the symptoms they give rise to have been noted and appropriate remedies have been discovered. The conjunctival sac in the new-born is held to be free from bacteria, but immediately after birth the conjunctiva is exposed to infection from the atmosphere or from the skin with which it is in immediate proximity at the edges of the lids. The tears exert a certain bactericidal action which may be due to a mere dilution of the secretion, seconded by the muscular action of the lids in winking, which force the secretion into the tear sac and into the nose. One thing is certain; the tears are a bad culture media for bacteria.

McGillivray, of Dundee, has shown that the surface temperature of the exposed cornea is about 18 degrees below that of the body temperature, an important factor in limiting the development of the bacteria in the eye. In all cases of conjunctivitis, tear-sac trouble and ulcerative keratitis a thorough bacteriologic examination should be made before treatment is undertaken.

The vast majority of cases of the acute type of catarrhal conjunctivitis has been found to be due to the presence of the Koch-Weeks bacillus, and in only a few cases have other germs been discovered. As a rule, these bacilli can only be discovered during the first few days of the disease. The treatment of this form of conjunctivitis consists in the application of nitrate of silver, 2 per cent. solution, or the 3 per cent. solution of largin.

Entirely distinct from this form is a chronic variety of catarrhal conjunctivitis affecting mainly the conjunctiva of the lids and especially well marked in the inner and outer canthi. Superficial infiltration of the cornea occurs and sometimes even severe purulent spreading ulcers are found which bear a marked similarity to the malignant ulcers serpens.

In 1896, Morax and Axenfeld both discovered a diplobacillus which, by a series of exhaustive investigations, they found to be the cause of this disease. The disease is very infectious and the bacilli retain their virulence for a long time.

It has been found that solutions of zinc have almost a specific action in the cure of this disease, and this may be freely applied even when ulcerations of the cornea arise. The zinc salt is used in a solution varying in strength from a half of 1 per cent. up to 2 per cent. It has been found that the solutions of the silver salts appear to be inert in the treatment of this condition.

It is interesting to note that this bacillus maintains its virulence in cultures up to the seventh generation.

We have another form of conjunctivitis frequently associated with infiltration of the cornea, which take on a malignant type, and develop the serpiginous ulcer. The germ is found to be a diplobacillus lanceolatus, or pneumococcus, as it is sometimes called. The treatment of this condition is active antiseptics, and the application of the galvanocautery to the ulcer.

Of the purulent types of conjunctivitis that exist, that caused by the gonococcus is the one most frequently met with and most disastrous in its results; it is extremely contagious, but the proportion of individuals suffering from gonorrhea who develop the gonorrheal conjunctivitis is comparatively small. The proportion of gonococci present bears no definite relation to the severity of the disease; many of the worst cases show but a few gonococci, while in the milder cases great quantities of gonococci may be present.

One of the most important symptoms in the differential diagnosis of certain eye diseases is the functional light perception of the eye. In examining the light sense there are two points which call for consideration: First, the minimum amount of illumination which will give rise to the sensation of light, and, secondly, the smallest average between two degrees of illumination which it is possible for the patient to perceive. The diminution of the light perception is mainly caused by a pathologic change in the outer or pigmentary layer of the retina, which layer goes by the name of photochemical apparatus of the eye. While a diminished value of the light difference perception is most marked in lesions affecting the optic nerve, in retinal and chorioidal lesions the light minimum is greatly reduced as a rule, and the light difference is but very slightly affected; hence, a diminution of the light perception pointing to a lesion of the retina or subjacent chorioid directs the attention to the possible cause of such a lesion. The nephritic type of retinitis is the one most frequently met with, and the prognosis is extremely grave. In the diabetic type of retinitis we have the same failure of light perception, but the prognosis is not nearly so grave. Another point of diagnosis is that the perception of colors is changed, the appreciation of blue being first lost, and this is in marked contradistinction to the failure of vision due to true nerve lesions, in which green is the first color to disappear. In hysterical amblyopia you will frequently find the vision improved under diminished illumination. The diminution of the power of appreciation between various degrees of illumination is most marked in cases of optic atrophy. F. A. and P. G.

Pathologic Histology of Parinaud's Conjunctivitis.—Verhoeff, F. H. and Derby, G. S., Boston (From the pathologic laboratory of the Massachusetts Eye and Ear Infirmary, Boston. *Klin. Mon. f. Aug.*, 1905, xliii, i, p. 705), gives the microscopic findings in two cases of their own and from all histologic reports so far published. The changes chiefly consist of cell necrosis and extensive infiltration of the subconjunctival tissue with lymphoid and phagocyte cells, chronic inflammatory reaction of the deeper tissues which leads to organization and production of new connective tis- Parinaud's conjunctivitis has no relation to the lymphoma of the conjunctivitis with lymphoid hypertrophy. The latter is characterized by an unusual development of relatively normal lymph follicles in the conjunctiva which may attain considerable dimensions. Parinaud's conjunctivitis has no relations to the lymphoma of the conjunctiva of adults, with which it has neither clinical nor histologic similarities. Trachoma and tuberculosis might be more apt to bear resemblance to Parinaud's disease, but are easily discriminated by histologic examination. It is distinguished from trachoma by the character of the cellular infiltration, the absence of follicles and necrotic foci, from tuberculosis by the lack of tubercles and cheesy metamorphosis. C. Z.

Lymphomatous Conjunctivitis (Conjunctivite Infectieuse de Parinaud).—Goldzieher (*Allgemeine Wiener Medizinische Zeitung,* June 27, 1905). This is one of the rarest affections of the eye. Its symptoms are as follows: Simultaneously with the formation of lymph nodules on the neck a severe inflammation of the conjunctiva with very large follicular granules makes its appearance.

In all the cases observed only one eye was involved, the other eye remaining perfectly healthy. In the diseased eye both the upper and lower lids were affected; they appeared swollen and hyperemic; the fornix was also very much swollen and the slightest touch caused bleeding. In this hyperemic and swollen conjunctiva numerous large follicular granules and vegetations make their appearance; aside from these there are also some small gelatinous follicles as is often seen in fresh cases of trachoma. There are, however, no exulcerations on the conjunctiva.

The second characteristic symptom of this disease is the presence of lymph nodes on the same side of the neck.

The affection differs from trachoma by the large size of its granules, by the lymphomata on the neck, and by the rapid course of the disease. From tuberculosis of the conjunctiva it differs by the absence of the characteristic exulcerations, the absence of bacilli and the complete restitution ad integrum.

The treatment consists in the abscission of the granules with scissors, checking the bleeding points with the galvanocautery, washing out of the conjunctiva with a 1 per cent. corrosive sublimate solution, and the internal administration of arsenic. J. G.

HYALIN DEGENERATION OF THE BULBAR CONJUNCTIVA.—BALLOPAN, LEMBERG (*Arch. f. Augenheilk.* Lii-Nos. 1 and 2), has found the records of but six cases where hyalin degeneration has affected the bulbar conjunctiva alone. His own case was seen in a 24-year-old woman who complained that for six months she had had the sensation of a foreign body within the right eye, with constant lacrimation. For three months she had noticed a fast growing mass upon the eyeball. Examination showed a flat, yellowish, yellowish-red growth extending from the corneal margin to the outer canthus and from the upper transitional fold downwards, including the inter-palpebral space. Its elevation was less than one-half cm. It had a firm, elastic feel and was less elastic than the normal conjunctiva. The rest of the bulbar, the palpebral conjunctiva and the retrotarsal folds were normal and there was neither infiltration or thickening at the corneal margin. The tumor was circumcised with a scissors and removed from off the globe to which it was found to be nonadherent. W. Z.

CORNEA.

CONTRIBUTION TO THE STUDY OF A FORM OF SCLEROSING PARENCHYMATOUS KERATITIS PROBABLY TUBERCULOUS.—CHESNEAU, Nantes. (*Annales d'Oculistique,* June, 1905). The author states that the idea of tuberculosis of the cornea is relatively new as for a long time authorities would not admit the formation of tubercles in an avascular membrane, ignoring the forms of parenchymatous infiltration of the cornea due to the bacillus of Koch or its toxins. Arcoleo, in 1862, first described primitive corneal tuberculosis and in compiling the reported cases of ocular tuberculosis estimated that in about 10 per cent. the lesion was located in the cornea. Haensel about the same time demonstrated the possibility of tuberculous infection of the sound cornea by direct inoculation in the rabbit and guinea pig. Panas reported the results of similar experiments to the French Ophthalmological Society in 1885. After a period of incubation lasting, in rabbits, from eight or eighteen days, during which the cornea maintained its normal appearance, the period of evolution commenced. First a small whitish patch appeared, then a little milk-white nodule surrounded by an opalescent zone and at the same time fine vessels advanced between the layers of the parenchyma. These tubercles seemed to infect the surrounding region and a number of small white points appeared in the opalescent zone. The epithelium was raised and the tubercle entered the period of ulceration. The ragged ulcer, scrapings from which yielded typical bacilli, was soon discovered by a dense pannus. Repair was effected slowly and was sometimes interrupted by a fresh attack with a new eruption of white points around the pannus and particularly toward the center of the cornea. The final result was an albugo. The progress of the ulceration was not constant. While a particularly violent culture in an animal of low resistance might cause a phagedenic destruction of the cornea with perforation, the inoculation of an animal of high resistance might give rise simply to the production of typical nodules, followed by absorption and leaving only a slight nebula.

The first authentic report of the presence of tubercular bacilli in the human cornea is that of a case by Roy and Alvarez (Soc. Anatomique, July, 1885). A child, four and a half years old, had double vascularized parenchymatous keratitis with little pain, and photophobia. The sclerotic in the ciliary region was raised in a slight bulging, which assumed the appearance of a tubercle in rapid evolution, and in a few days, the sclerotic was perforated. The entire ciliary body was now involved and its whole circumference was swollen. A granulation appeared in the conjunctiva and the cornea was invaded by a number of whitish streaks which progressed rapidly to ulceration. Microscopic examination of the product of curettage showed the presence of bacilli and giant cells in the deep layers of the parenchyma. There was evident pulmonary tuberculosis.

The bacillus of Koch was found by Wagerman in a corneal ulcer, and by Hilbert in the pus of a central round ulcer of the cornea in the case of a woman with lupus of the forehead.

A number of cases, secondary to other tubercular affections of the eyes, particularly of the conjunctiva, have been reported. It is generally admitted that, as Panas says, "every keratitis originating in the parenchyma is dependent upon a diathesis." Endo-affections exercise this influence upon the cornea through the uveal tract and a uveitis, sometimes not clinically recognizable, always precedes a parenchymatous keratitis. The tubercular origin of many cases of keratitis has been established by Panas and others, and is frequently met with in the scrofulous, patients afflicted with diseased joints and Pott's disease and the subjects of hereditary tuberculosis.

In addition to parenchymatous infiltration of the cornea secondary to tuberculous lesions of the iris and ciliary body, there is a form which seems to have its point of departure in the evolution of tubercle in the ligamentum pectinatum. According to Bach there are four forms of corneal tuberculosis. First, the parenchymatous keratitis which he attributes to the action of tuberculous toxins: It is liable to be accompanied with violent iritis. Second, sclerosing keratitis consecutive to tuberculosis of the ligementum pectinatum. Third, a form of primitive tubercular keratitis commencing in the sclero-corneal border without any previous lesion of the iris or ligamentum pectinatum. Fourth, tuberculosis of the cornea secondary to a bacillary affection of the conjunctiva.

In addition to these forms the author of the paper reports a number of cases of what he calls sclerosing tubercular keratitis, and believes to be distinct from any of them. It usually commences with a localized patch of episcleritis two or three millimeters from the limbus, not differing in appearance from the ordinary rheumatic episcleritis. This is usually of slight extent, but may involve a fourth or a third of the visible sclerotic. Beneath this there is in some cases a bluish injection of the sclerotic which sometimes causes a swelling perceptible to the finger and the eye. Then nodules appear in a part of the cornea which has been perfectly clear. The number of these nodules is variable—sometimes there are but one or two and sometimes they are confluent. They differ also in color, sometimes they are decidedly yellow, with a paler spot in the center, sometimes more reddish, and at others of an indefinite, dingy color. Each nodule is two or three millimeters in diameter and they are of an irregular roundish form and not sharply defined. The epithelium remains sound. Occasionally the little parenchymatous focus disappears by absorption, but the rule is to end in sclerosis preceded by vascularization. The iris is generally slightly or not at all involved.

In addition to the general treatment of tuberculosis, the author insists upon the efficacy of subconjunctival injections of air.

G. C. H.

SCLEROSIS OF THE CORNEA.—MELLER, J., assistant at the eye clinic of FUCHS, PROF. E., Wien. (*Klin. Mon. f. Aug.,* 1905, II, p. 209). In blind eyes occasionally an intensely white opacity of the cornea gradually develops without symptoms of irritation. Meller studied this condition in two blind eyes enucleated for other reasons. In one, in which two attempts to remove the dislocated lens had been made in vain in two previous occasions, the white color of the cornea was caused by a layer of tough, connective tissue between corneal epithelium and Bowman's membrane, undoubtedly starting from the limbus. This condition has been described by Baas as pannus degenerativus and is probably due chiefly to exterior lesions, in the widest sense of the word, which may frequently act on such eyes, impaired in their sensitiveness.

In the second case, traumatic cataract had developed after an injury by a piece of iron. After 18 years it was extracted with iridectomy. Vision was lost soon after the operation and the eye was enucleated on account of recurrent pain. The cornea was intensely bluish-white. This was due to swelling of the corneal substance caused by the aqueous humor, which could penetrate as the endothelium was altered, defect and detached from the Descemet's membrane. Meller classes this process under the opacities, starting from the posterior surface of the cornea, from traumatic (deposits of precipitations, exudates, dislocated lens, etc.), or chemical (cocain, sublimate, etc.), lesions of the endothelium. The causes for the degeneration of the endothelium in this case may have been changes in the aqueous, owing to the other degenerative processes going on in the eye. Four lithographic illustrations represent the histological conditions of the two cases. C. Z.

CONTACT KERATITIS AFTER CATARACT EXTRACTION.—BRUNS, HENRY DIXON, New Orleans. (*Ophthalmic Record,* September, 1905). Two cases of contact keratitis occurred in cases following cataract extraction. The two cases were both operated upon the same day by the simple method. One case was 71 and the other 58 years of age, but they were both much older physically than their years. The anterior chamber of each was very slow in reforming, the wounds not closing until the eighth day. There appeared a central zone of corneal interstitial infiltration, which later was found in contact with some capsular remains in the anterior chamber. This latter could not be determined until the chamber had reformed. The patients were in such poor physical condition that tonics were given. After the tenth day rapid clearing begun and resulted in complete resolution of the opacity in each case in about sixteen days. M. B.

Miliary Abscesses Developed in the Corneal Cicatrix Primary Striped Keratitis.—Noyon (*Tydschr. v. Geneesk..* *ives d'Ophtalmologie,* June, 1905.) Terrien states that in studying experimentally the cicatrization of the wound after the operation of cataract in dogs he has frequently met with little masses of leucocytes, real little miliary abscesses in the cicatrix. They can be seen only with the microscope, occur only in the first few days after the operation and are not found towards the tenth or fifteenth day, when the cicatrization is more advanced. They do not appear to interfere much with the closing of the wound. It is probable that these little abscesses may occur in man and that in predisposed subjects they may become the point of departure of infection of the globe. G. C. H.

Primary Striped Keratitis.—Noyon (*Tydschr. v. Geneesk..* Jan. 21, 1905), observed a case for eight months during the last year. Most cases are secondary and found in eyes with longstanding cyclitis or glaucoma absolutum. His patient was 54 years old, came for spectacles and said that the vision of his left eye has somewhat diminished. He had suffered a few apoplectic insults, out of which he held a paresis of the right arm and leg with somewhat weakened mind. Vision of the right eye was nearly 1. with + 2 D.; of the left eye, ¼ with + 1 D. A grayish-brown streak passed across both corneas, which was smaller in the center; at the limbus as well as at the temporal and as at the nasal side, a very small border of transparent corneal tissue still existed. The opacity could nowhere be transilluminated, consisted of compact spots and points which formed microscopically a nearly homogeneous tinted band across the pupil, the covering epithelium was unchanged. Upper and under limit of the bands were sharply defined. In the right eye enough pupillary space was free, in the left eye the band was broader, after dilatation of the pupil vision rose to ¾. Everything else was normal in both eyes. Never was any sign of redness or irritation noticed; the eyes were closed in the night. General arteriosclerosis and irregular pulse were present; urine free from albumin and sugar in two examinations. During eight months the vision, tension, visual field and opacity remained stationary. Only one small spontaneous conjunctival hemorrhage appeared. He died after another apoplexy.

No difference exists microscopically, neither pathologically, if Leber's opinion is right between the primary and secondary form. The cornea must be drenched with an abnormal nutritive fluid. This fluid is secreted by abnormal vessels. In the secondary cases the possessor of the eye is healthy, but the ocular vessels are sick, in the primary cases the possessor of the eye has a general vascular disease and the ocular vessels are also sick.

Straub thought that this condition is not so very rare, perhaps combined with gout; he saw it oftener with private patients than with the poor; first the opacity is brown, becomes later white, sometimes pain is present; he operates with v. Graefe's knife, which easily lifts the opacity from the underlying tissue; de Wecker did the same long ago. One of his five patients regained very good vision; too much irregular astigmatism remained with the others.

Koster saw a case in a totally healthy eye, the other one had a macula, the opacity in Bowman's membrane was little, as scraping of a central opening resulted in good vision.

Snellen said that the operation is already old, Bowman and Dixon already found chalk, while Nuel and Goldzieher did not find it; Leber demonstrated that the fixation process extracted the chalk. Snellen scrapes with a small chisel. His impression is that Bowman's membrane is affected. Koster thought the change of Bowman's membrane was not at all always the main thing. Van Moll sometimes found slightly higher tension and performed an iridectomy, after which the condition remained stationary for many years. Duhring begins with ammonium and lithium salts (5 per cent. sol. benzoas lithic.) with good results. E. E. B.

On Isolated Dehiscences in Descemet's Membrane.—Axenfeld, Th., Frieburg, Br. (*Klin. Mon. f. Aug.*, 1905, V. xliii, No. ii, p. 157). The left eye of a boy aged 15, enlarged from infancy, shows the clinical picture of megalocornea with normal ophthalmoscopic conditions and almost normal vision. By vertical skiascopic movements of the plane mirror wavy glaring transparent lines are noticed, which, on examination with the binocular lens of Zeiss, consist of folds with double contours, between which there are absolutely transparent lines, representing the dehiscences in Descemet's membrane. The latter prove that an originally smaller cornea was stretched and occur only in hydrophthalmus and therefore show that such cases, probably all cases of megalocornea, are nothing but spontaneously arrested instances of hydrophthalmus.

In Case 2, Axenfeld found as cause of an acute exacerbation of keratonus a spontaneous rupture of Descemet's membrane, and subsequent entering of aqueous humor. He had surmised this process in a former case. The ruptures have nothing to do with the development of keratoconus and need not occur even in very marked cases. They set in as results of stretching and diminished resistance in a portion of cases, with their acute, but transient consequences of swelling and temporary thickening. Then the endothelium covers the fissure and the symptoms of exacerbation disappear. The well-known slight opacity at the apex of the conus which in the more severe cases gradually develops, is not due to a former rupture of Descemet's membrane, but to a gradual alteration of the extended and thinned parenchyma. C. Z.

New Formation of Connective Tissue at the Posterior Surface of the Cornea.—Bartels, Rolf (from the eye clinic of Prof. E. Fuchs, Wien., *Klin. Mon. f. Aug.*, 1905. V. xliii, No. ii, p. 15), observed thick layers of connective tissue in a case of iridocyclitis and three cases of perforation of Descemet's membrane after formal corneal ulcers. Most authors consider the affection as a proliferation of the endothelium. In Bartels' cases, however, this origin could not be proven and an organization of the exudations in the anterior chamber was assumed. Bartels also thinks that the opacities of the cornea after hypopion are due to these proliferations and not situated in the parenchyma of the cornea. They thus would be the optical expression of that form of keratitis which is supposed to start from the posterior surface of the cornea. This view is strengthened by the occurrence of peripheral anterior synechiæ, without preceding perforation or bulging of the iris, through organization of shrinking exudates filling the sinus, by which the originally separated tissues of the cornea and iris become adherent through interpolation of a new-formed layer of connective tissue. C. Z.

Remarks on the Treatment of Philyctenular Keratitis.—Chevalier, Mans. (*L'Ophtalmologie Provinciale*, September, 1905.) Above all things Chevalier lays stress upon the occlusive bandage, as it immobilizes the eye and lids, and at the same time, protects the eyeball from infection, and (in children) from injury and contamination by the fingers. Next in importance he places atropin, and for the following reasons: (a) It diminishes the ocular secretions; (b), it modifies the circulation, producing first a local anemia, followed by a vasodilation; (c), it reduces the erethism of the iris; (d), it stops or clogs diapedesis; and (e), it puts the sphincter of the iris and the ciliary muscle at rest. When the eye is painful, especially when there is an additional great hyperemia of the conjunctiva, he adds cocain and adrenalin to the atropin.

In speaking of the occasional use of eserin in the affection, he indicates two ways of preventing decomposition of the solutions of this drug (or the formation of rubreserin): One is by adding sulphurous acid, and the other is by adding boric acid. The first he considers the more effective. He says that the salicylate of eserin is more resisting than the sulphate. Next, in the order of treatment, is massage, either simple or in association with medicaments; either indirectly, through the lids, or directly, upon the cornea and conjunctiva. He does not use massage with the yellow oxids of mercury ointment, or with blue ointment in the acute stages of the disease, or when a phlyctenule is unbroken. He looks for the best results from these preparations in the stage of superficial ulceration and infiltration.

As regards the treatment of any resulting corneal opacities, he speaks of the use of benzoate of lithia, and states how this substance got into ocular therapeutics. It seems that a certain Mazet of Marseilles, actuated by the knowledge that salts of lime are uniformly an element in these opacities, and are often the predominant one, sought for a substance which was capable of dissolving out their material from these cicatrices, yet one which would be harmless to the eye. He employed the benzoate of lithia, which is a solvent not only of the urates, but also of the phosphates and the carbonates of lime, and a drug which is perfectly tolerated by the cornea and the conjunctiva. In a few instances, Chevalier says patients complain of brief attacks of smarting and burning following the use of the drug. It is employed dissolved in water in the strength of one-fourth to one gram in ten grams; two or three drops of the material are instilled twice or three times daily. The drug may be continued without any inconveniences for a long period of time.

In the same connection, the use of subconjunctival injections of sea-water, and of air, are touched upon: The first one to be sterilized by boiling, the loss of evaporation being compensated by adding distilled water. One to two cubic centimeters are to be injected beneath the conjunctiva at the point which is nearest the corneal spot. The treatment is applicable to old as well as to recent opacities. The injections should not be repeated more frequently than one to two weeks. The mode of filling the syringe with air for the other form of injection deserves notice. The syringe is sterilized and provided with an iridium-pointed platinum needle. The needle is plunged into a mass of aseptic cotton, the piston drawn back, and then the needle is heated in a flame.

Among the remedies internally administered, reference is made to the yeast of beer, as antagonistic to the staphylococcus; microscopic investigations having tended to show that the phlyctenules owe their existence to the presence of this germ, the dried yeast is given in doses of twenty grains, one before each meal. In children ten grains in milk are to be used. C. H. B.

GUMMA OF THE CORNEA.—TERSON, A. (*Archives d'Ophtalmologie,* May, 1905.) Though the specific origin of certain forms of keratitis was unknown before the time of Hutchinson it is now generally acknowledged. But the ulcerations and gummata of the cornea are still under discussion and the following case seems to the author to be clinically and etiologically typical.

A corsetmaker, 22 years of age, has been under treatment before for an interstitial keratitis. She had a well-marked hereditary history and had had interstitial keratitis in one eye and peripheral pigmentary chorioiditis in the other and her teeth were typical. There was a slight parenchymatous keratitis of the right eye, with violent iritis, and the limbus and the neighboring sclerotic were slightly bulging, as if a new growth or a general infiltration of the irido-corneal angle existed. Under treatment by intramuscular injection of biniodid and administration of cod liver oil, the iritis improved and the corneal haziness diminished; but there was a violent relapse, the bulging of the limbus increased and two yellowish infiltrations appeared at the lower part of the cornea. Finally a yellow patch appeared near the center of the cornea and in a few days attained the form of a large tear, with margins sharply limited, and acquired the volume of a hemp seed. It was interstitial, but projected in front of the cornea and into the anterior chamber. There was no ulceration. The author then used injections of calomel, which he had seen succeed in perforating gumma of the ciliary organ when other means had failed. He made four intramuscular injections of five centigrams of calomel in the buttock, two a week. The gumma became grayish after the third injection and ended by absorbing, leaving only a slight opacity.

The author considers it proved that gumma of the cornea, however rare it may be, is possible in severe and late hereditary syphilis as well as in the acquired form, and that vigorous mercurial treatment, particularly by injections of calomel, is capable of causing absorption as in gummata of the rest of the organism.

G. C. H.

A Case of Discoloration of the Cornea by Blood Pigment, and One of Hemorrhage of the Cornea.—Wadsworth, O. F., Boston. (*Ophthalmic Record, August,* 1905.) There have been only three cases of discoloration of the cornea with blood pigment reported in this country. A considerably greater number have been reported abroad. Treacher Collins reported nine cases in 1895. Interest centers in this condition because of its rarity, because of the path by which the pigment finds its way into the cornea, and because at a certain stage, the resemblance to a lens dislocated into the anterior chamber. Hemorrhage into the anterior chamber seems to be an universal accompaniment. Baumgarten, in 1883, was the first to report a case. Since Collins' report in 1895 nothing has been added to our knowledge of the subject. The case reported by the author is that of a boy aged 12, whose right eye was injured by a stick, causing a penetrating wound of cornea with prolapsed iris and blood in anterior chamber. Later, the eye continuing inflamed, the lens appeared to be dislocated into the anterior chamber, and an operation was attempted for its extraction. But it was found that a mistake had been made and that the anterior chamber contained only clotted blood and that there was actual corneal discoloration. It was found later advisable to enucleate the eye. A lengthy pathological report is given by Dr. F. H. Verhoeff. The discoloration of the central portion of the cornea, seen with the naked eye, is found to be due to an enormous deposit of granules which in unstained specimens are light yellow in color. These granules fail to give the iron reaction, stain in eosin and in picric acid, but react most intensely to Mallory's phosphotungstic acid hematoxylin, which stains them dark blue. The second case reported is one of hemorrhage into the cornea. There was first a central corneal ulcer with hypopion. The latter was treated by a marginal paracentesis. The ulcer healed, leaving a scar. About three months later, while lifting a piano, a hemorrhage occurred into the cornea in the region of the scar tissue. The eye became much inflamed and painful, finally developed increased tension and later was enucleated. The pathologic findings showed the presence of blood in the cornea, but very few hematoidin granules were found. M. B.

Corneal Cyst, with the Report of a Case.—Frank, Mortimer, Chicago (*Annals of Ophthalmology,* July, 1905). W. W., male, aged 45 years, sought advice on account of a tumor of the right eye which had existed for fifteen years. No history of ocular injury. Examination showed the presence of a cyst-like growth situated at the apex of a pterygium, on the nasal side of the right cornea (illustration). A similar process is beginning in the left eye, as shown by the presence of numerous pin-point elevations on the apex of a commencing pterygium. The cyst measured 3 mm. in height, 4 mm. in width by 5 mm. in length, starting at the limbus and lying wholly upon the corneal surface. It was opaque, whitish in color and firm to the touch. A hypodermic needle passed into the cyst withdrew about two minims of a clear, almost colorless fluid, faintly alkaline in reaction. The cyst collapsed, but the anterior chamber remained full, showing no communication with the anterior chamber. Microscopic examination of the cyst contents showed cellular débris and a few epithelial cells. The pterygium was torn loose from the cornea with a strabismus hook. Forming the posterior wall of the cyst was a firm, thin scale of tissue, 3x4 mm., which had probably separated from the cornea by pressure necrosis. This was dissected out and the wound in the conjunctiva was drawn together with two sutures and the corneal area corresponding to the cyst curetted. The wound healed promptly. The microscopic report follows, which shows that the cyst walls were composed of stratified epithelium. M. B.

A CASE OF KERATITIS NODOSA.—WILKINSON, OSCAR, A.M., Washington, D. C. (*Annals of Ophthalmology,* July, 1905). The author finds only 12 reported cases in the literature. Two by Groenouw, one by Chevellareau, one by Krukow, eight by Fuchs and one by Menzutto. The etiology of the disease is unknown. There is usually no history of any inflammation of the eye except a slight conjunctivitis. The special diagnostic feature of the disease is the central opacity of the cornea of each eye, coming on gradually, without a previous history of any serious inflammatory trouble, accompanied by a gradual loss of sight which is never complete. The opacity is limited to the central area of the cornea, and is usually slightly elevated. The periphery of the cornea is usually perfectly clear. The opacities are in the superficial layers of the cornea. It may occur in the young or the aged. The author's case was that of a retired army officer of 70 years of age, who for many years had been a very hard drinker. His ocular condition tallied closely with the description given above. M. B.

A RARE CASE OF CORNEAL AFFECTION.—ZONA OPHTHALMICA. LESION OF THE POSTERIOR LAYERS OF THE CORNEA, CONSEQUENT ECTASIA OF THE ANTERIOR LAYERS.—MARQUEZ, M., Madrid (*Archivos de Oftalmologia,* July, 1905), describes the following rare case:

Slight pericorneal injection in the right eye, in the center of the cornea a nearly round elevated area, anesthetic and somewhat larger than the pupil. Anterior chamber, iris and tension normal. Several lesions in the fronto-palpebral region indicated a recent zona-ophthalmica; fluorescine showed the epithelium intact.

The diagnosis rested between ampella, keratocele and tumor. A few days later the elevation disappeared and one noticed in the deep and posterior layers of the cornea an opacity which, with oblique illumination, was seen to consist of numerous white minute spots, and which was not entirely opaque. The vision was reduced to fingers at one-half meter, save when an obscure light enlarged the pupil. Steam douches and dionin were used. A month later a mydriatic was employed and immediately there appeared fifteen or twenty minute whitish striæ, radiating in all directions from the opacity, some reaching nearly to the periphery of the cornea. A myotic was then instilled and three days later all but two striæ had disappeared, which phenomena were attributed to the hyper- and hypo-tension due to the use of the mydriatic and myotic respectively. Later, on the discontinuance of the heretofore applied pressure bandage, an ectasia corneæ threatened, which was controlled by reapplication of pressure, another evidence of the part played by the intra-ocular tension. The lesion was cauterized two or three times with no appreciable result. When seen several months later the condition was unchanged, save for a slight divergent strabismus.

Marquez is of the opinion that the case was one of corneal complication of zona, implicating the posterior layers, especially the endothelial, resulting in an opacity of the posterior and an ectasia of the anterior layers from the intra-ocular pressure. A classification of the various ocular lesions with zona is given, together with an extensive reference to the literature. H. M. F.

GENERAL DISEASES AND VISUAL ORGANS.

Intermittent Mydriasis of Hysterical Nature.—Carlini (*La Clinica Oculistica,* September, 1905). A woman, 27 years old, had, at the age of 10 years, an attack of intermittent fever. Four years later she developed a chronic bronchitis. A few years before the patient was seen she was ill for a month. During this illness the pupil was dilated with redness and tumefaction of the conjunctiva. For a year afterward the pupil dilated at times. The mydriasis would last from a few hours to 4 or 5 days. A careful examination of the body showed all the organs normal. The affected eye was slightly exophthalmic without vasomotor or trophic change in the corresponding half of the face. The motility of the eye was normal. The pupil of the left eye was normal; that of the right eye was greatly dilated. Refraction of both eyes with the skiascope was + 1.00 D. Binocular vision was preserved. The perimeter showed a slight concentric restriction of the visual field. Accommodation was not altered. The duration of the mydriasis was very variable, oscillating between the fraction of an hour and 4 or 5 days. The intervening periods varied from 1 to 15 days. The exophthalmos disappeared occasionally and seemed to have no connection with the pupillary dilatation. Visual acuity and the field of vision could be influenced by suggestion. The trouble was doubtless due to stimulation of the sympathetic of the affected side.

R. H. J.

FUNDUS CHANGES IN GENERAL DISEASES, ESPECIALLY IN ANEMIC CONDITIONS.—PAGENSTECHER, Eppendorf (*Arch. f. Augenheilk.*, v. lii, No. iii), records instances of (1) retinal hemorrhages in severe chlorosis; (2) retinal changes in loss of blood in ulcus ventriculi abortion, malaria and hemophilia; (3) retinal hemorrhages in hemorrhagic diathesis. He has found but few instances of retina hemorrhages in chlorosis (1.2 per cent.). Changes in the papillary region vary from blurring of the disc with fullness of the veins to choked disc, rarely terminating in atrophy and permanent reduction of vision. His observations in the first group do not sustain Ulrich's theory, that the hemorrhage is occasioned by the sudden reduction of blood pressure causing venous compression at the edge of the disc with hemorrhagic extravasation, as in one case no visible extravasation was present on the fourth day, but recent hemorrhages were present on the twentieth day of the illness. This theory also fails to explain the white retinal areas present. The author attributes the retino-chorioidal disturbance to changes in nutrition consequent upon the anemia. The ocular changes in the second group are the result of the loss of blood and are not direct manifestations of the disease. He believes the changes in the third group to be due to the blood discrasia rather than to the loss of blood. W. Z.

INHERITED AND ACQUIRED SYPHILIS IN THE SAME SUBJECT.—BRUNS, HENRY DIXON, New Orleans (*Ophthalmic Record*, September, 1905). The case of hereditary and acquired syphilis in the same subject occurred in a negro, aged 23. He presented the characteristic appearances of hereditary syphilis as described by Hutchinson. At the same time he had a papular syphilide of the forehead and forearms, with an acute iritis of each eye, with multiple foci of gummatous infiltration, many posterior synchia, and classical, parenchimatous punctate keratitis. M. B.

A DISCUSSION ON INTRA-OCULAR TUBERCULOSIS.—JESSOP, WALTER H., London (*Boston Med. Jour.*, Aug. 26, 1905). The writer gives a table of twenty cases collected from various authors, presenting statistics of age, sex, previous family history, clinical tuberculous signs in other organs, operation, results, macroscopic and microscopic examination.

Regarding solitary and miliary tubercle of the chorioid the writer pointed out that "solitary tubercle was generally found as a rounded spherical body of gray, white or yellow, starting beneath the retina from near the optic disc; it seldom tended to infiltrate the retina. Nodules were generally to be seen on it, and often it seemed made up of them. The retina around was sometimes flecked with spots like diabetic retinitis, but not pigmented, while for a long time the tumor remained subretinal. Yellowish spots might be seen on its surface, like lichen, and these were due to caseation. Hemorrhages might occur, but were not often recorded. In miliary tuberculous chorioiditis, tuberculous meningitis was nearly always present. At St. Bartholomew's Hospital, in 15 cases of tubercle of the chorioid found in the postmortem room, 14 had tuberculous meningitis, and only one had not; this case had miliary tubercle of lungs, peritoneum, kidneys, spleen, etc. He felt convinced that the two very frequently co-exist, and it was not a fact, as stated by Horner, that the presence of tubercle in the pia mater contraindicated its presence in the chorioid."

As to diagnosis the best test was inoculation experiments; in many cases, especially when caseation had taken place, the bacillus was not to be found. Other signs of tubercle in the body were of considerable assistance.

The writer had never come across a case he could prove to be primary intra-ocular tuberculosis, and he doubted the existence of such a condition. The occurrence of chorioiditis in the course of acute miliary tuberculosis was probably 30 to 35 per cent. recognized by the ophthalmoscope before death and 50 per cent. found postmortem.

He had but little experience with tuberculin. From the excellent results of von Hippel and Schieck with tuberculin TR, he would certainly try it on every doubtful case as a means of diagnosis and in all the cases for treatment. It was necessary to watch the temperature of the patient very carefully, and it should be taken night and morning. The largest dose at start ought not to be greater than 1/500 mg., gradually increasing to 1 mg., for each dose.

Excision should be seldom done in these cases, unless there was a great deal of pain or the condition was actually telling on the patient's health. As the condition was not primary, it would remove only one focus, and the procedure was, without doubt, attended with danger which was much increased if the sclera was involved. Out of 11 cases which ended fatally after the excision of the tuberculous eye, no less than eight died within two months of tuberculous meningitis. There was a great contrast to Schieck's 13 cases treated with tuberculin, in which all were cured, and no eye was lost.

He had never seen vitreous opacities in tuberculous ocular disease. After tuberculous chorioidal troubles there was very little apparent change in the part of the fundus in which the tubercle existed.

In cases of chronic pulmonary phthisis occurring in St. Bartholomew's Hospital he could find no note of chronic chorioidal change. In over 119 cases of chronic tuberculosis in children, Carpenter and Stephenson had found chorioidal changes in 9 per cent., and had divided these into four groups: (1) solitary, (2) multiple, (3) disseminated, (4) diffused.

As to the signs of obsolescent tubercle, his own two cases were the only ones he had to go on in which the presence of tubercle bacilli or tuberculous inoculation experiments made the diagnosis of the case sure, and the lapse of four or five years enabled the so-called "obsolescent" changes to be seen. In these the changes were not in the macular region, but started near the disc, as did also most of the twenty cases detailed. The absence of much scarring and the total absence of pigmentation seemed to distinguish the cases from those of syphilitic type. C. H. M.

VACCINE OF THE LID MARGIN.—SCHEFFLES, Crefeld (*Woch. f. Therap. u. Hyd. des Aug.*, No. 38, 1905), records an instance of vaccine of the lid margin occurring in a man whose child had recently been vaccinated. The lids were swollen and painful. The ulcer was of the size of a pea and involved corresponding parts of the margins of both lids. The floor of the ulcer was of a dirty-white color. The conjunctiva was greatly swollen, but the cornea remained intact. The lymphatics were slightly enlarged. W. Z.

OCULAR VERTIGO OF INTEREST TO THE GENERAL PRACTITIONER.—CROFT, BENJAMIN P. (*Boston Medical and Surgical Journal*, Sept. 14, 1905). Croft argues for the friendly co-operation of the general practitioner and deprecates the recent rather strenuous discussion as to the failure of the general physician to properly recognize the results of impaired ocular functions. The writer judges from his experience that vertigo of ocular origin is common. He groups it under three heads: (1) The form seen in paralysis of the ocular muscles, (2) that seen in ocular muscle imbalance, (3) that accompanying errors of refraction. Examples of these several kinds are given. E. E. J.

THE OCULAR ORIGIN OF MIGRAINE.—GOULD, GEORGE M., Philadelphia (*Jour. A. M. A.*, Oct. 28, 1905), says that of the atypical diseases migraine is, by all odds, the leader, and groups roughly the symptoms most bespoken in this disease in six classes:

1. Periodicity, or alternation of attack and freedom from attack; but no two cases showing the same law either as to length of time between attacks or during which the attacks last.

2. Scotoma scintillans, if occurring, always preceding the headache; half of the time not followed by headache or other symptom.

3. Headache, insided, outsided, one-sided, both-sided, front-sided, back-sided, top-sided, bottom-sided, of a hundred different kinds, intensities, and characteristics, and ascribed to a thousand different causes.

4. Nausea, retching or vomiting, of all possible irregularities, regularities, intensities, lengths; present in a minority of cases; the vomiting, when occurring, clearing up the crisis in a majority of cases, and followed by a re-establishment of temporary health.

5. Psychic and nervous symptoms, such as dejection, often proceeding to profound depression and even to suicidal tendencies, together with nameless and indescribable sufferings, each person's descriptions differing from another's, but all agreeing in seeming exaggeration, with possible insomnia, "hysteria," "neurasthenia," "nervous break-down," etc.

6. Physical symptoms accompanying the attacks, or following them, or replacing them during the intervals between, such as anesthesias and hyperesthesias of many kinds, extents and intensities, paralyses, functional cardiac diseases, aphonia, influenzas and "colds," digestive disturbances and dyspepsias, skin diseases, "rheumatisms" and localized pains, spinal or shoulder pains, neuralgias, and many other symptoms.

He traces the history of the development of the idea of the causal relation of eyestrain to these nervous and migrainous disorders, and quotes many authorities on this subject, also cites numerous instances in his own practice and that of others where groups of severe migrainous symptoms were dependent on eyestrain, as was evidenced by their cure by ocular treatment. M. D. S.

A New Ocular Symptom of Basedow's Disease.—Teillais, Nantes (*Archives d'Ophtalmologie,* May, 1905). The symptom to which the author calls attention is a brownish discoloration of the lids which he has observed in three reported cases. Drs. Jellineck and Rosen, of Vienna, in a work on the chemistry of the blood, have also observed this phenomenon and described the symptom as a brownish pigmentation spread uniformly over the skin of the upper and lower lids, ending at the eyebrow above and at the orbito-palpebral furrow below. It is often an early symptom and in many patients the pigmentation diminishes as the disease advances. This pigmentation of the lids must be classified with other irregular pigmentary anomalies in various parts of the integument in the course of Basedow's disease.

Schroetter reported, at the Congress of German Naturalists and Physicians in 1903, a case of this kind, in which the patient presented extensive pigmentation in some places and absence of pigment in others and changes in the subcutaneous connective tissue. Jellineck and Rosen found in subjects of Basedow's disease astonishing differences between the coloring power and the proportion of iron in the blood. With a normal number of red corpuscles and a proportion of iron more or less above the normal, they found constantly a relatively high proportion of hemaglobin. In other words, the coloring power of the blood appeared abnormally high not on account of ferric coloring material, but of hemaglobin, and Schroetter refers these pigmentary manifestations and the lesions that accompany them to anomalies in the secretion of the thyroid gland.

This symptom thus interpreted comes to the support of the theory of Möbius, who claims that Basedow's disease depends upon disturbance of the function of the thyroid gland, and opposes the nervous theory. Hence ophthalmic goiter would appear to be a thyroidean condition, the reverse of myxedema, which may, however, succeed it when lesions of the thyroid have ended in the destruction of the organ. Exophthalmic goiter is a result of excessive functioning of the thyroid gland and myxedema of its insufficient functioning.

This theory is supported by the changes observed in the thyroid body, the fact of the development of the symptoms of Basedow's disease in patients subject for a long time to simple goiter, and finally by therapeutic experiences. Ablation of the thyroid may cure the patient, while the administration of excessive doses of thyroid extract produces phenomena of intolerance, which present the picture of exophthalmic goiter. It is difficult, however, to deny the influence of the nervous system in the pathogeny of the disease. The question at issue is to decide if the nervous symptoms are secondary to the thyroidean intoxication which acts in an elective way upon certain parts of the nervous system, or if the disturbance of the bulbar functions is primitive. G. C. H.

UNILATERAL OPTIC NEURITIS AFTER RHEUMATISM.—BRÜCKNER, Wurzburg (*Arch. f. Augenheilk.*, lii-liv). Brückner's patient was a man, 18 years of age, who, 18 months previously, had suffered from acute rheumatism. Notwithstanding that there was a pronounced neuritis, V. = 6/6. One year later the disc was pale and the nasal border veiled. The vessels were normal and V. = 6/3. The author thinks that there can be no doubt that the optic nerve affection began long before the primary disease, and is to be explained not by the direct action of the micro-organisms on the optic nerve, but through the action of their toxins. W. Z.

ACROMEGALIA AND BITEMPORAL HEMIANOPSIA.—DE LAPERSONNE, Paris (*Archives d'Ophtalmologie*, August, 1905). The author reports a case of acromegalia with bitemporal hemianopsia and insists on the importance of this symptom, which, he says, is often overlooked by non-specialists. There is more and more a tendency to admit that there is no case of acromegalia without it. According to Henschen, the bundle of crossed fibers lies always internal in the optic nerve, and immediately behind the chiasm it occupies the infero-internal part of the band. An increasing pressure of the chiasm may end by causing degeneration of all the fibers of the optic nerve and complete amaurosis with atrophy of the papilla, but this occurs very slowly and may require years to produce it. Hence, in many reported cases blindness in the last stages is noted, but it is not stated that this was preceded by temporal hemianopsia.
G. C. H.

FALSE HAY FEVER.—HARMAN, N. BISHOP, London (*Brit. Med. Jour.*, Aug. 26, 1905). The writer gives his observations of half a dozen cases, all of which had been diagnosed and treated as hay fever; these he was able to relieve by appropriate glasses—these prevented the exaggeration of an ordinary physiologic reflex.

"The rationale of these cases of false hay fever is perfectly easy of comprehension. The reflex irritation of the fifth cranial nerve from irregular stimulation of the optic nerve forms one of the stock illustrations of 'reflexes' of every text-book of physiology. Sneezing is readily excited by the sudden exposure to bright sunlight, particularly when reflected from snow or sea. In these cases the irritating effect of brilliant light is exaggerated by an error of refraction, particularly by an anisometropia. Most folk who have traveled even a little must have suffered the reflex of sneezing from the exposure to strong and sudden sunlight, and it is quite easy to demonstrate that the liability to the reflex is greater when the refraction of the eye is irregular."

The writer considers the association of retinal reflexes with the fifth cranial nerve irritation as so certain that the ophthalmologist who fails to submit the eyes of a patient suffering from "hay fever" to expert examination has not only not exhausted all the possibilities of treatment, but failed to exclude one of the first causes of trigeminal irritation. C. H. M.

OPTIC ATROPHY FOLLOWING ERYSIPELAS OF THE FACE.—ADDARIO, C. (*Archivio di Ottalmologia,* xii, Fasc. 1-2), has studied the action of streptococcus and staphylococcus toxin on the optic nerve. He witnessed two cases in the clinic in which atrophy of the papilla had not been preceded by a local inflammatory process, but was evidently a descending degenerative process. He injected the bacillary toxins into the retrobulbar connective tissue of rabbits to study their eventual action on the optic nerve. He was unable to detect any lesions in the nerve visible with the ophthalmoscope, notwithstanding the extreme virulence of the toxins previously injected. He concludes from this research that lesions of the nerve in man may be explained not only by an inflammatory process in the nerve or in its sheath near the eye, but also by a thrombophlebitis which may be localized in the minute ramifications of the veins behind the nerve, thus producing in time atrophy of the papilla as a process of descending degeneration. C. A. W.

OCULAR COMPLICATIONS AND SEQUELÆ IN MEASLES AND THEIR PROPHYLAXIS.—BRAV, AARON, Philadelphia (*Med. Chir. Jour.,* Sept. 20, 1905). All infectious diseases of childhood show some signs of their toxicity by a manifestation of ocular symptoms. Particularly are these symptoms well marked in measles. The ocular conditions manifest themselves early and are characteristic of the disease. The eyes are suffused, red, the conjunctiva, in addition to an increase in its vascularity, is sometimes edematous. The lacrymal glands are overstimulated so that there is an increase in the lacrymal secretion. The mucous membranes of the nasal duct, lacrymal canal and canaliculi are in a catarrhal state, and the edema interferes with the normal transportation of the conjunctival fluid so that there is an overflow of tears.

There is a photophobia due to the hypersensitiveness of the cornea. These are practically symptoms of a toxic conjunctivitis, the primary cause of which is a toxin circulating within the vascular system. Sometimes the early ocular symptoms do not subside, but rather become intensified during the period of desquamation; especially is this the case in children of weak constitutions, strumous diatheses, scrofulous and tuberculous.

Whenever the ocular symptoms persist during the period of desquamation they are of great importance, and are always fraught with some danger. Measles is the responsible factor in 2 per cent. of total blindness.

Eye symptoms in measles serve for diagnostic purposes inasmuch as they appear long before the eruption, long before "Koplic" spots on the mucous membrane of the hard palate are visible. Among the laity they are considered as a physiologic manifestation of a normal childhood phenomenon, and even the physician is apt to forget that they are the result of a circulating toxin within the blood.

Often do they call for optical aid because of a reduction in the acuity of vision, under careful examination by oblique illumination, corneal opacities, resulting from a healed ulcer that left a cicatricial scar behind, can be demonstrated.

In cases of unilateral corneal opacities the defective eye often deviates from its normal axis, producing strabismus, which in the majority of cases is of a convergent type.

The deviated eye is often found to be hypermetropic, of a high or low degree, but the deviation is not caused by the refractive error, but by the centrally placed opacity following an inflammatory condition of the cornea, resulting from measles.

Every case of conjunctivitis requires treatment lest corneal complications set in and damage the eyesight. We often find in the clinics the picture of phlyctenular conjunctivitis, eczematous conjunctivitis, keratitis and ulcerations of the cornea. Strabismus is often attributed by the parents to measles.

The debility following measles may also act upon the external ocular muscles and weaken them. This, super-added to an error of refraction, is sufficient to disturb the muscle balance and give us the picture of a convergent or divergent strabismus, depending upon which muscle is affected.

Ocular conditions in favorable cases are of mild character, and are present only in the first and second stages of the disease, but in many cases they persist in the third stage, when they are of considerable importance. (1) Phlyctenular conjunctivitis, (2) eczematous conjunctivitis, (3) marginal blepharitis, (4) superficial keratitis, (5) ulcer of the cornea with its occasional bad results, (6) blennorrheal conjunctivitis with corneal complications, (7) obstruction in the lacrimal canal, (8) spasm of accommodation, (9) paresis of accommodation, (10) paresis of external muscles, (11) neuro-retinitis, (12) optic atrophy, (13) gangrene of the lids.

The physician should immediately inform the parent of the necessity of absolute cleanliness. The child's hands should be thoroughly washed three or four times daily, with warm soap water, for children are apt to rub their eyes with their hands and not only increase the irritation, but carry infection to them. The face should be kept clean. The child should be kept in a large, well-ventilated room with a uniform temperature and should have a light covering. It should remain in bed for at least two weeks, during which time the toxins are eliminated. The room should be kept shaded; no direct light should be permitted to fall upon the eye. The practice of completely darkening the room I can not recommend. Light is essential to our lives, and a sick child should not be deprived of it. Full light should be permitted only after the eyes have become normal in appearance and the conjunctival inflammation has completely subsided. By preventing direct light from falling upon the cornea we diminish the photophobia and guard against irritation of the cornea.

The itching of the eyelids should be relieved by an ointment of vaselin containing ¼ of a grain of yellow oxide of mercury to the drachm. When the congestion of the conjunctiva is very marked one drop of a solution of 1/4000 of the suprarenal extract three times daily will afford considerable relief.

Intense photophobia may be relieved by the instillation of a few drops of cocain. Should the photophobia persist, always suspect some corneal involvement, and the instillation of 1 per cent. solution of the active principle of belladonna is indicated. The catarrhal symptoms should be combated. The nose should receive a daily spray of boric acid solution. This greatly aids in the prevention of any inflammation and subsequent obstruction in the lacrimal sac. Other conditions must be met as they arise.

He has of late been using a 5 per cent. solution of argyrol in every case of measles. H. V. W.

Do Diabetic Iritis and Glaucoma Exist? Should Iridectomy Be Performed in a Diabetic Patient?—Alvardo, E. (*Archivos de Oftalmologia*, September, 1905.) The first instance of diabetic iritis was reported by Demarquay in 1864. In 1889 the author referred to a case of diabetic iritis and now reports that in 42,166 eye cases he noted 19 with lesions due to diabetes, among them being four cases of iritis (two of them terminating in secondary glaucoma), one of atrophic chorioiditis and one of simple subacute glaucoma. Judging from the limited number of cases of iritis observed in diabetics, one might consider this affection to be but a simple coincidence. Diabetic iritis has no special characteristics, although its course is somewhat more irregular, the alternating improvements and aggravations depending on the amount of sugar present in the fluids of the economy. The prognosis, on account of the possibility of secondary glaucoma and other complications, he does not think it as favorable as it is generally held to be.

The number of reported cases of diabetic glaucoma is even less than those of iritis. Nearly all theories, thus far advanced, as to the pathogenesis of glaucoma in general are more applicable to diabetic glaucoma than to the cases due to other causes. Furthermore, the sugar, or some one of the toxic substances contained in the blood of the diabetic, acting on the nervous system or vasomotor apparatus, in its centers or in the eye itself, or producing vascular changes by its constantly irritative action on the vessel walls, favors a hypersecretion, which is again considered to be the best explanation of the initial phenomena of glaucoma. However, he thinks it should be looked upon as a complication of the general condition, because diabetes, perhaps more than other pathological processes, can cause alterations, toxic in origin, in any part of the uveal tract, as well as in the retina and optic nerve and distant parts of the economy.

Further, diabetes favors an infection in the eye the same as it causes furuncles, gangrenes, etc., in other parts. That the iris is involved in diabetes has been demonstrated by the researches of Kamocki and Deutschmann, who, on examining portions excised before operating for cataract and the eyes of patients who had succumbed to diabetes, found that there existed a marked edema of the pigmentary layer, although during life they were unable to detect the slightest sign of inflammation. H. M. F.

GLAUCOMA.

THE EARLY RECOGNITION OF GLAUCOMA.—AYRES, S. C., Cincinnati (*Jour. of Ohio State Med. Assoc.*, July, 1905), gives the symptoms and signs present in cases of beginning glaucoma and discusses the indications for medicinal and operative treatment of the same. W. R. M.

A CASE OF TRAUMATIC GLAUCOMA.—BRAND, EMIL, Augsburg (*Centralbl. fuer Aug.*, 1905, p. 275), occurred in a man, aged 30, after injury of the cornea with dust of cast iron and at the first using a mydriatic (the author does not remember whether it was atropin or scopolamin), which relieved the inflammation. Under eserin the condition improved, but recurred several times, so that iridectomy had to be performed. Peculiar was a formation of vesicles on the cornea, and Brand calls attention to their development after injuries as perhaps due to a slight glaucomatous condition of the eye. C. Z.

THE DEVELOPMENT OF GLAUCOMATOUS EXCAVATION.—SCHNABEL, Wien (*Zeitschrift fuer Aug.*, 1905, p. 1), presents 15 microphotographs of specimens of the different stages of the anatomical process of glaucomatous excavation and describes them minutely. Schnabel refutes the hypothesis of excavation by pressure. In front and behind the intrascleral lamina cribrosa and within the corresponding portion of the optic nerve, glaucomatous atrophy is a primary process in the parenchyma of the optic nerve. The latter is disintegrated and absorbed, leaving a system of cavernæ, with septa of connective tissues. Shrinkage and mutual approach of the latter cause an empty space in front of the intrascleral lamina, into which the retina may be dislocated, and behind the lamina a space into which the latter may enter. The breaking down and shrinking of the connective tissue which, after absorption of the parenchyma of the optic nerve, is the only contents of the sclerotico-chorioidal canal, creates the large hole, open in front, in the anterior end of the optic nerve, i. e., the glaucomatous excavation. The glaucomatous atrophy alone does not suffice to produce an excavation, but without glaucomatous atrophy, or if of slight extent, no excavation can develop. Genuine atrophy changes, but does not remove the contents of the sclerotico-chorioidal canal. It, therefore, can never have the characteristics of glaucomatous atrophy. If it takes place in a glaucomatous eye it prevents the development of an excavation with the qualities of a glaucomatous excavation. Thus Schnabel demonstrates anatomical specimens of optic nerves which under high intraocular pressure were not excavated, and others which under normal intraocular tension had acquired glaucomatous excavation. He concludes: If a certain form of excavation may occur sometimes under normal, sometimes under increased pressure, the same mode of development must be assumed, as long as there is no proof to the contrary, and the hypothesis must be abandoned that the excavation in eyes with abnormally high tension is caused by pressure. C. Z.

ON THE FILTRATION OF THE EYE AND ON ITS ROLE IN THE PATHOGENY OF GLAUCOMA. REMARKS RELATIVE TO THE WORK OF DR.

Uribe Y. Troncoso.—Leber, Th., Heidelberg. (*Annales d'Oculistique,* June, 1905.) This article is an answer to the criticism by Uribe Y. Troncoso of the author's manometer of filtration and does not discuss the relation of filtration to glaucoma. As to the theory of Troncoso that the increased intraocular pressure in glaucoma is due to an excessive quantity of albumin in the intraocular fluids, the author thinks that it is contrary to the facts. He says that in his dissections of pathological human eyes he had always given special attention to the quantity of albumin contained in their fluids and asserts that the largest proportion of albumin is not found in glaucomatous eyes, but in those with internal inflammations and diminished tension—such as purulent ophthalmia, serous iridocyclitis and chronic plastic iridocyclitis, old retinal separation, etc., in which all the cavities and interstices of the tissues are often found filled with albumin coagulated by Müller's fluid; while he has never seen a similar condition in glaucomatous eyes. G. C. H.

Sympathectomy in Glaucoma.—Abadie. (*La Clinique Ophtalmologique,* Oct. 25, 1905.) Abadie states that in our time the treatment of glaucoma has made great progress. In the acute and subacute forms, in the intermittent crises and generally it may be said that in those cases in which myotics are powerless the efficacy of iridectomy may be relied on. In chronic simple glaucoma iridectomy does not act so favorably, but the biquotidian instillations of myotics prolong indefinitely and allow the preservation of vision for several years. Nevertheless there are cases in which neither of these measures are able to prevent blindness, in which, notwithstanding iridectomy and the use of myotics, the tension remains elevated and the disease is not stopped in its progressive evolution. In these rebellious forms, Abadie, in 1897, for the first time, at the Congress of Ophthalmology, recommended section of the cervical sympathetic. Since that time the operation has been done with varying success. It is well understood that in the forms of glaucoma in which iridectomy does well it would be absurd to wish to substitute the ablation of the superior cervical ganglion for such a simple and efficacious operation. At the same time in cases of chronic simple glaucoma, in which myotics indefinitely prolong the preservation of vision, there is no advantage to be gained from any other means. But the reverse is the case, Abadie states, where other efforts fail, then sympathectomy may prevent blindness; he reports three cases.

The first was in a woman of 55 years, who was attacked in 1894 with double subacute glaucoma, and Abadie did a double iridectomy in June, 1894, and followed it with instillations of pilocarpin; but, notwithstanding, vision lessened slowly. The tension remained slightly above normal, and Abadie did a sympathectomy of the right upper cervical ganglion. Some days afterward vision was clearly improved and the patient counted fingers at two or three meters. This result still remained in September of 1905. On the contrary, the left eye has only a very faint light perception.

The second case was 55 years of age. In 1893 vision commenced to lessen and violent headaches began. An oculist was consulted who prescribed myotics. A sclerotomy was done on left eye and vision was totally lost in that eye. In 1895 a sclerotomy was practiced on the right eye, but did not arrest the disease. Myotics were used until 1900, the sight lessening all the time. October 17, 1900, ablation of right superior cervical ganglion was made, since which time half vision has been maintained. The third case was in a married domestic, 32 years of age; never had had any serious disease; the eye trouble began in 1900, and it followed a benign angina. Photophobia with orbital pains appeared, and vision began to lessen little by little. Dubarry diagnosed double glaucoma and proposed iridectomy, which was refused, and pilocarpin ordered twice daily; vision still lessening, the patient consented to iridectomy, which was done on the right eye and on the left, January, 1905, by Dubarry. In spite of this, vision continued to lessen, and Dubarry did a sclerotomy on each eye without stopping the glaucomatous process. Abadie found double glaucoma, with increased tension in left eye and no light perception. In the right eye profound papilla excavation and visual acuity 1/50. Abadie advised ablation of right superior cervical ganglion, which was done May 16, 1905, by Dr. Guneo. The following day the tension of the right eye was normal and the patient claimed to be better; vision 1/40 eight days later, which was still retained in September; patient satisfied, but sorry operation had not been done earlier.

These cases are very instructive, Abadie claims, because they demonstrate that sympathectomy seems to have produced a definite result, while other means failed. B. E. F.

CONTRACTION OF THE PUPIL IN GLAUCOMA.—SANTOS, FERNANDEZ J., Havana. (*Archivos de Oftalmologia*, June, 1905.) The question is raised, what should be done for a patient whose eye is injected, the pupil contracted, the vision nearly lost, and who suffers with trigeminal neuralgia? As a rule the contracted pupil in glaucoma was observed in cases which were not diagnosed early and had been treated elsewhere as simple ophthalmia. After referring to a case published by Trousseau, the author reports the three following:

Case 1: Woman, 45 years old, with negative history, suffered a few weeks before with pain in the eyes and parietal regions, treated elsewhere for neuralgia. The pains gradually subsided, but the vision was reduced to light perception. When seen there were conjunctival injection, slight pericorneal edema, cornea normal. Pupil slightly contracted, immobile and irresponsive to light. "The tension about physiological; if at times it appeared to be elevated we attributed it to auto-suggestion, as we expected to find it increased." No view of the fundus possible. The symptoms pointed more to an iritis with chorioiditis, but the age of the patient and the fact that her mother had been operated for glaucoma led us to diagnosticate the latter. Improvement following iridectomy and excavation of the papilla, noted later in each eye, confirmed the diagnosis. Condition eight years later unchanged.

Case 2. Fifty-nine years old. Three months previously left eye congested and painful and vision reduced; treated for conjunctivitis with improvement in lateral vision; central vision clouded. "Patient unable to read with right eye on account of a similar attack long before, but the papilla was not excavated." Diagnosis rested between an attack of glaucoma and iritis. "The pupil, though not contracted, was smaller than the normal." Its oval form suggested glaucoma. Tension appeared increased, T + 1, and the conjunctival vascularization was characteristic of glaucoma rather than iritis. Aqueous slightly turbid. Iridectomy followed by relief from pain, clearing up of the anterior chamber and betterment of vision.

Case 3. Woman, 69 years old, during the preceding year left eye (now atrophied) operated for glaucoma, followed one month later by pain and loss of vision of the right. Mere light perception, very slight conjunctivial injection, pain less severe past few days, "and the pupil was contracted about the same degree as one usually finds in iritis which has yielded to atropin or some other mydriatic." Tension greatly increased, T + 3, in each eye; fundus not visible. According to the druggist who accompanied the patient, eserin had recently been instilled, preceded, probably, by atropin. No further details of the case given. "The above observations are another proof of the difficulties which the diagnosis of glaucoma may present, even to those accustomed to see daily many eye patients and who are familiar with the symptoms." H. M. F.

HISTORICAL.

Arabian Ophthalmology.—Hirschberg, Prof. J., Berlin. (*Jour. A. M. A.*, Oct. 14, 1905.) The Arabian ophthalmology is founded upon that of the Greeks, but while the Greeks in a thousand years produced only five text-books of ophthalmology, the Arabs in 500 years created over thirty text-books, fourteen of which are still preserved. The first learned work is composed of ten books written by Hunain. The classical text-book for the Arabs was written by Ali Ben Isa about 900 years ago, and in form this book is a model even to-day. The most original book on Arabian ophthalmology was written by Ammar, the title of the work, "Choice of Eye Diseases." He mentions one Persian and two Andalusian text-books on ophthalmology, the contents of the first being compared with that of the Arabian text-books of that period. Two books, each remarkable for its extent and learning, were written near the close of the period of Arabian creation, one by Halifa. in 1260, the other by Salah ed-din about 1290. Ophthalomological chapters from works on general medicine and monographs of various subjects of ophthalmology are mentioned. The Arabian anatomy of the eye is derived from the Galenic, but the following four points are interesting: (1) The Arabian text-books of ophthalmology contain the oldest pictures of the anatomy of the eye. (2) Our anatomical nomenclature of parts of the eyeball comes from the medieval translations of Arabian text-books. (3) The first attempt at a comparative anatomy and physiology of the eye was made by Sadili. (4) The contraction of the pupil to light was first described in the anatomy of the eye of Razi. The theory of vision as stated by Ibn al-Haitam in his handbook of optics about the year 1000 was quite advanced. The pathology and therapeutics of ophthalmology were evidently acquired from the Greeks, but they described several eye diseases unknown to the Greeks, for instance, their description of pannus and its cure by peritomy. In eye surgery they were superior to the Europeans of their own time, and even of the following centuries. The text-book of ophthalmology of Haifu contains the pictures of not less than thirty-six instruments for eye operations. The cataract operation, which is described somewhat, consisted in couching and suction. After a brief mention of their system of oculistic ethics, Prof. Hirschberg says, in conclusion, that the Arabs were the only masters of ophthalmology of medieval Europe, and their name, which is written with indelible characters in the firmament, never will be effaced from the memorial stones of ophthalmologic art and science.

M. D. S.

INJURIES.

Ocular Injuries.—Black, Melville. Denver (*Colorado Medicine,* October, 1905), discusses the subject of ocular injuries and especially the minor injuries, and emphasizes the great importance of proper treatment, at the time the case is first seen by the physician. He calls attention to the fact that a slight injury may, through neglect, result in the loss of the eye, while a very serious injury may be so treated in the beginning as to cause but slight impairment of vision. W. R. M.

Ocular Traumatism from Caustics. Ovio. (*La Clinica Oculistica,* August, 1905.) From a series of experiments on rabbits' eyes, the author concludes that burns with acids are less dangerous than with alkalies. Ammonia is an exception to this rule. One drop of nitric or sulphuric acid is sufficient to destroy the eye. A drop of acetic acid causes grave consequences, but not as grave as the preceding ones. A drop of sulphuric acid with an equal quantity of water causes an indelible cloudiness. Caustic potash has a more powerful action than acids. Diluted with water it still destroys the eye. One drop of a saturated solution—aqueous—of caustic potash has a greater volume than such a drop of sulphuric acid and to this fact he attributes the more deadly action of the former. Ammonia and acetic acid have a much slower action than the above. Alcohol, ether, chloroform, tincture of iodin and phenic acid are all dangerous to the integrity of the eye. Chloroform is more dangerous than ether and alcohol—less so than iodin.

R. H. J.

Tine of a Steel Fork Thrust Through the Left Upper Eyelid, Eyeball and Through the Antrum of Highmore. Therein for Fourteen Years. Removal. No Reaction.—Keiper, George F. (*Ophthalmic Record,* September, 1905.) The patient, a colored man, was injured during a quarrel 14 years previous by a fork. One of the tines penetrating the upper lid and eyeball. The vision was destroyed. After the inflammation subsided the part gave him no more trouble and nothing was done for it. Two years ago the wound reopened. Examination showed exuberant granulations in and on the left upper eyelid, and upon probing a piece of metal was found just underneath the eyelid. After enlarging the wound with scissors the piece of metal was grasped with forceps and removed. It proved to be the tine of a steel fork. Further probing proved that it had extended down into the antrum, as the foreign body was 56 mm. long. M. B.

Double Perforation of the Eyeball (Anterior and Posterior Wall) by a Crochet Needle, with Recovery of Full Visual Acuity.—Feilke, Dresden (*Arch. f. Augenheilk.*, lii. H. i and ii), records this unique case which was seen in a girl 8 years of age. The needle entered the eyeball 2 mm. from the corneal limbus, down and out, penetrated the vitreous and came out in the orbital tissues behind the globe. The engagement of the hook with the edges of the wound made it difficult to extract the needle. Notwithstanding cautious manipulations the aqueous was lost and there was a prolapse of the iris and vitreous. The former was excised. Six months later V. = 6/6. W. Z.

Pathogenisis of Traumatic Affections of the Orbit.—Cause, Wurzburg (*Arch. f. Augenheilk.*, B. lii. H. iii), records a case of emphysema of the orbit the result of a blow upon the eye. Upon aspirating the orbit nothing but air came away. On the return of the exophthalmus an incision 1½ cm. long was made through the entire thickness of the outer 1/3 of the lower lid, resulting in the escape of large red air globules and the replacement of the globe. The opening was packed and a bandage applied. Cure resulted. The author says that the case proves, with the force of an experiment, the production of exophthalmus by emphysema of the orbit the result of fracture of the os planum.

In an instance of lacerated wound of the superciliary region with marked exophthalmus aspiration of 15 c.c. of brown and in part, clotted blood, resulted in the gradual return of the eyeball to its normal position during the operation. The disturbance of vision and the dilatation of the pupil present during the existence of the exophthalmus, the author thinks most simply explained by attributing it to the pressure exerted upon the nerves and circulation by the blood exuded into the retrobulbar space, as both symptoms disappeared on release of the blood and the recovery was complete and permanent. A slight ptosis which persisted was probably due to injury of the levator.

The third case was one of traumatic enophthalmus. The patient, a man 46 years of age, had been kicked in the orbital region of the left eye by a horse. On subsidence of the swelling, eight days later, it was observed that the eye lay deeper in the orbit and was smaller than its fellow. He complained only of intense pain, which was due to fracture with callus thickening of the outer end of the inner third of the lower orbital margin. The enophthalmus measured

3 mm. The fissure was ½ mm. narrower than its fellow. The downward movement of the eye was slightly fuller than that of O. D. The upper tarso-orbital fold was very deep. The position of the eye was uninfluenced by pressure upon the jugular. There were no other symptoms. Ten months later the condition was unchanged. The author's explanation of the pathogenesis of traumatic enophthalmus is that as the result of a contused injury of the orbital region a tearing or detachment of all or some fibers of the orbital fascia takes place, with almost always a fracture or infraction of the bony margin of the orbit or of its walls. He makes two classes, the one due entirely to lesion of the bands of fascia and the other to secondary fixation of the ball in its new position after lesion of the fascia, with usually subsequent further retraction of the globe. In this class there are commonly associated injuries especially of the motor apparatus. W. Z.

TRAUMATIC IRIDODIALYSIS.—TEICH, Wurzburg (*Arch. f. Augenheilk.*, 499 H. 3), states that traumatic detachment of the iris with intact intraocular tunics is one of the extremely rare pathologico-anatomical findings. In Teich's case the principal histological changes were an extensive detachment of the iris from the ciliary body, with a profuse hemorrhage into the interior of the eye with undoubtedly intact external tunics. Of interest was the condition of the anterior chamber. In one position there was a tearing loose of the iris, leaving a stump of iris tissue; in another position there was complete detachment with exposure of the ciliary muscle. At the place of laceration there was an endothelial-like covering which was continuous with the endothelium of the cornea and extending further onto the surface of the iris. As a result of this the angle was shut off to the nasal side, permitting filtration only of fluids, whereas to the temporal side the occlusion was incomplete, so that cellular elements could pass. This indicated different stages of a regenerative process. The detachment of the ciliary body and of the chorioid may have been occasioned by the entrance of aqueous humor through a tear in the ciliary body, by a tear in Schlemm's canal or through a diminished resorbative power of the anterior surface of the iris. In the present instance that the detachment was produced by the aqueous humor is without doubt. W. Z.

SUBCONJUNCTIVAL RUPTURE OF THE SCLERA.—BRUNETIERE. (*l'Ophtalmologie Provinciale,* March. 1905.) Brunetiere does not entertain the pessimistic notions regarding many of these injuries that are common to certain English eye-surgeons; viz., that the affected eye is destined to atrophy; that its vision is doomed; that, sooner or later, sympathetic inflammation will ensue; and hence, immediate enucleation must be urged. He thinks that recently there has been started an agitation in favor of surgical measures that are less radical. In proof of the beneficient results of the more conservative methods, he recites the history of a case in point. It is that of a man 59 years of age, who, while groping about in the dark, ran the inferotemporal portion of the right eye violently against a curtain-peg. The upper and inner ciliary zone of the sclera was ruptured, subconjunctivally, for a distance of 25 mm., 3 or 4 mm. back of, and concentric with the corneal limbus. Through the rent the lens escaped.

The patient was admitted to the hospital the next day. The only treatment was that of absolute rest on the back in bed, with instillations of atropin morning and evening. His nourishment consisted of milk taken through a tube. The interior of the eye soon cleared, the crystalline lens was absorbed, and the rupture healed, giving rise to an astigmatism of 6 diopters. When the patient was last seen, some three months after the accident, the eye was quiet and vision equalled one-third of normal. The fact that the conjunctiva was intact mitigated the prognosis.

Notwithstanding the unfavorable outcome in many such injuries, the author does not believe, with Fuchs, that the majority of them carry a bad prognosis. The treatment, he thinks, should be, above all, expectant: Absolute rest during the first days, with antiseptic irrigation, solutions of methyl blue to the conjunctiva if infection is feared, etc. He does not agree with Panas and most other ophthalmologists in recommending the use of eserin, but, like Lagrange, gives preference to atropin. Neither does he advise suturing the sclera, thus converting, he says, a submucous wound into an open one. If the lens is dislocated into the anterior chamber, it may be extracted later, but if it be beneath the conjunctiva it should be left to absorb. C. H. B.

A CASE OF SPONTANEOUS DISLOCATION OF THE EYEBALL.—LEVIN, H., DR., Berlin (*Berl. Klin. Woch.*, 1905, No. 35, p. 1105). A man, aged 53 had exophthalmus (no vascular murmurs, no Graves' disease) of both eyes from early youth, as long as he could remember. His father, his father's brother and several other members of the family, and the daughter of the patient also, had very prominent eyes. The affection did not inconvenience him until within the last few weeks he suddenly awakes from his sleep with intense pain and finds the left eyeball, exceptionally also the right, out of the orbit in front of the lids, i. e., a complete dislocation of the globe, which he can replace with his fingers. The dislocation at once takes place when the patient stoops his head toward the left side or if the lids are stroked backward under moderate pressure on the eyeball. Excepting a slight conjunctivitis and incipient cataract of left eye, the eyes are normal. V. R. 6/6; L. 6/8. During dislocation the pupil is wider and does not respond to light, and, on ophthalmoscopic examination the disc is slightly veiled, somewhat pale, its borders indistinct, the arteries narrow, i. e., of the same appearance which can be elicited by pressure with the finger on any eye. After reposition these symptoms disappear at once, only the injection lasts a little longer. Levin could find no similar case in literature.

The patient suffers from general disturbances of circulation; the dullness of the heart extends over the right margin of the sternum, he has emphysema of the lungs, varices on the legs, the face is cyanotic, and he suffers from epistaxis. Levin assumes stagnation in the veins of the orbit, which in horizontal position during sleep apparently grows to such intensity that the eyeball, prominent by hereditary predisposition, is completely crowded out of the orbit. Probably the fasciæ, which under normal conditions fixate the position of the globe and prevent exaggerated excursions, are here very loose and yielding. The treatment consisted in application of a bandage over night. As this can not effect a permanent cure, tarsorrhaphy will be indicated. C. Z.

TRAUMATIC ENOPHTHALMIA AND ITS PATHOGENY. — BISTIS, Athens. (*Archives d'Ophtalmologie*, September, 1905.) Traumatic enophthalmia is developed either by a fracture of the walls of the orbit or by a traumatism acting in the neighborhood of the eye and causing its recession indirectly. It is the latter form that the author considers as true traumatic enophthalmia. He reports the following case: A man 45 years old received a contusion in the region of the right eye by a fall from a horse, followed by edema and ecchymosis of the eyelids. When these symptoms had subsided he noticed that the right eye appeared smaller than the left.

At the internal third of the superior margin of the orbit there was a bruise, but no other lesion could be discovered. There was a retraction of the ball of about 5 mm. In other respects the eye was normal.

Various theories have been suggested for the pathogeny of this affection. A lesion of the periosteum followed by inflammation and contraction of the orbital tissue; retrobulbar hemorrhage, with cicatricial degeneration of the orbital tissue; rupture of the ligamentous wings of the capsule of Tenon containing unstriated muscular fibers; diminution of the fatty tissue of the orbit from trophic cause as the result of a nervous lesion; lesion of the sympathetic either as the result of an orbital hemorrhage causing nervous irritation and muscular spasm or of a vascular spasm followed by defective nutrition, and paralysis of the sympathetic and Müller's orbital muscle. The author thinks that the last-mentioned theory gives the most probable explanation of the pathogeny of his case. He does not, however, consider the paralysis of Müller's muscle sufficient of itself to cause the enophthalmos, but supposes that the non-striated muscular fibers found in the prolongations of the capsule of Tenon which connect the muscular system of the eye with the globe and with the walls of the orbit are also paralyzed.

As to the way in which the sympathetic is involved he supposes that the traumatism causes an excitation of the supra-orbital nerve which is transmitted through the ciliary ganglion to the sympathetic root, and, impeding its function, produces a paralysis of the non-striated muscles of the orbit. In this connection he cites a case of enophthalmos reported by Bjorström which was attributed to neuralgia of the trigeminus. The prognosis as to vision in enophthalmos is considered very favorable. G. C. H.

Intraocular Foreign Bodies.—Menacho, M., Barcelona (*Archivos de Oftalmologia*, June, July and August, 1905). In an article based on 321 cases, 28 personal, Menacho discusses the symptomatology, pathologic anatomy and pathogenesis, diagnosis, sympathetic ophthalmia, radioscopia and radiographia, treatment, prognosis, etc. The article is exhaustive and well worthy of perusal in the original. He concludes as follows, dividing the cases into three groups, though recognizing the fact that nearly every instance is a case unto itself.

First.—Recent injuries: (A) when the trauma is extensive and a large body remains in the eye, both the function and organ being lost, and the resulting atrophic stump will not well tolerate a protheses; in such cases enucleate at once. (B) when the projectile has not disorganized the eye, if it is magnetic: (1) if it lies in the anterior segment extract it with the electromagnet, if in the posterior segment extract if its location is not too deep; (2) when it is non-magnetic, if in the anterior chamber remove by operative procedure; if in posterior segment one should distinguish between those that can be localized and those that can not; the former, if accessible, one should remove, but if they are deep their extraction is equivalent to the loss of the organ; therefore, we would advise waiting, prepared to enucleate immediately on noticing any symptoms of intolerance; if the foreign body can not be localized expectative treatment as in the preceding instance.

Second.—Wounds already cicatrized; (A) magnetic bodies. If easily accessible, extract with the electromagnet; if difficult of access from being deeply situated, if encapsulated, suspend any intervention, but if not encapsulated extract. When situated in the lens, if inhibition has set in, remove, but if the lenticular opacity remains limited or circumscribed await developments. (B) If the body is copper remove it, even though the extraction is very difficult. (C) When the body is non-magnetic and is not copper, if situated in anterior segment, remove, but if its location is deep and difficult of access it is preferable to wait.

Third.—When it is evident that the foreign body is well tolerated, by which we mean its presence during several months without any reactionary symptoms having been manifested, we advise expectative treatment, but the patient should be warned of the peril to which he is subjected; this, however, only in case the patient is intelligent; when such is not the case, and especially when he lives distant from the proper attention should occasion demand it, we believe intervention to be more advisable.

The only effective operation to prevent sympathetic ophthalmia we consider to be enucleation; this affords the greatest security possible, and, although it does not allow as movable a stump for an artificial eye as does exenteration, we do not think that this should have as much weight in forming our opinion as the idea of avoiding any possible after-complications.

(Apropos to the last question, it may be well to mention that Eversbusch, Graefe-Saemisch, 1903, recently called attention to "a phenomenon I have repeatedly noticed, i. e., that before the appearance of a sympathetic ophthalmia there was an intense nasal congestion strictly limited to the side of the nostril corresponding to the eye first affected, which, later on, appeared in the opposite nostril. On this account in all threatening cases I regularly inquire at the daily visit as to the condition of the nostril and order the same to be repeatedly and carefully examined, in order not to be too late in enucleating.) H. M. F.

INSTRUMENTS AND METHODS OF EXAMINATION.

A SIMPLE ELECTRIC OPHTHALMOSCOPE.—SASSEN (*Tydschr. v. Geneesk,* Jan. 21, 1905), found that the electric ophthalmoscope with perforated mirror is unfit for use, no matter how well the margin of the opening be blackened. Therefore, Sassen made no opening in the glass, but simply in the foil. (With Wolff's ophthalmoscope one looks over the mirror.) A four-volt lamp fed by a dry element or a small accumulator or a small battery is the light-source, which is much smaller than for Wolff's; it makes it cheaper and can be brought much nearer the eye; it can be added to an ordinary ophthalmoscope. Esser's in Amsterdam sells at $4.00. E. E. B.

DOUBLE LENS.—DR. KOERBER (*C. Blatt fuer Aug.,* 1905, p. 277), combines in one mounting a lens + 20.00 for focal illumination with a lens + 13.00 for indirect ophthalmoscope examination. It has the advantage that only one instrument is needed instead of two, and that misplacements and mistakes in picking out the required lens are avoided. It is manufactured by Doerffel and Faerber, Berlin. C. Z.

A NEW STOP SPECULUM.—MUELLER, L., Wien (*Klin. Mon. fuer Aug.,* 1905, ii, p. 266), has the advantage that it can be removed without opening the compressed lids; if closed, it falls out by itself. On the other hand, it is very easily inserted, even if the patient shuts his lids with great force. C. Z.

EXENTERATION KNIFE-SPATULA.—BEARD, CHARLES H., Chicago (*Ophthalmic Record,* July, 1905). This knife-spatula was designed for the removal of the contents of the sclera in the operation of exenteration of the globe. The blade is double-edged, is about 4 mm. wide at its base and gradually tapers to a rounded extremity. Its length is 2½ cm. It is curved on the flat for two-thirds of its distance from the tip. The edges are not so keen as the usual knife edge. The object of the instrument is the separation of the uvea from the sclera by its cutting as well as by its riving, or splitting qualities. M. B.

A NEW TEST FOR VISUAL ACUTENESS.—BERRY, G. A., Edinburgh (*Brit. Med. Jour.,* Aug. 26, 1905). The writer says that, "in connection with visual acuteness, there are two points which can hardly be said to be definitely settled. The one has reference to the scale, according to which fractional amounts of the full normal standard should be estimated. The other takes into consideration the nature or configuration of the test objects which may be most suitably used when the scale has been decided upon." The commonly adopted scale is such a natural one that it is difficult to see how one can escape from it; it represents something consistent, reasonable, accurate and scientific, but it is not satisfactory as a scale of efficiency, since the nature of employment must, to some extent, influence the question of efficiency and it must be estimated differently in the cases, for instance, of a skilled workman and of a laborer.

Conceding that the ordinary Snellen's tyes are scientific, sufficiently accurate, easily applied and practical, he believes, nevertheless, that they possess certain defects which make it possible to conceive of something more suited to particular cases; he mentions these defects.

For certain purposes a somewhat different system of test may be advantageously used. Instead of letters whose characteristic elements are separated by spaces subtending known angles at the eye examined at different distances, a number of alternately black and white squares of the same size as these spaces may be used; the surface thus covered by squares should be of considerable extent; the way in which these quadrillated surfaces are seen depends upon the distance at which they are placed from the eye and the degree of the eye's acuteness. The squares used are 1.5, 3, 6 and 12 mm. in size, subtending angles of 1, 2, 4 and 8, at 5 meters. At and beyond some particular distance, according to the acuteness of sight, these surfaces no longer appear checked, but either run into lines or simply look uniformly gray. The appearance of lines is due to the eye's astigmatism, and when seen they run parallel with the diagonals of the squares. Whether such lines are seen or not, the surfaces come to be uniformly gray and beyond some definite distance.

On account of this astigmatic effect it is convenient to be able to test at the same time with surfaces on which the squares run in different directions. With the smaller squares this may be done by having several surfaces arranged along different meridians on the test card. For the larger squares less space is taken up by having the test card circular, so that it can be rotated into any position.

Both plans may easily be combined. The acuteness should, I think, be taken for the position in which the squares run parallel to the direction which their diagonals have when they appear in lines. That is, the surface seen drawn out into lines has to be rotated through 45° from the direction of the lines. On the test card there are a number of surfaces which are actually gray, and which can then be used for controlling the statements of the individual under examination.

Berry has used the small 1.5 mm. and the 1 mm. squares for the last 12 years for testing the acuteness of vision where it is more than 20/20; that is, the difference in the acuteness in normal eyes and also for estimating the influence of illumination on acuteness. A test of this kind would no doubt be of service and accurate for anthropologic researches in acuteness of vision; it is valuable for children and illiterates and useful for estimating the degrees of superacuteness of vision. C. H. M.

Unification of Visual Tests.—Landolt, E., Paris (*Zeitschr. fuer Aug.,* xiii, p. 519). In ophthalmologic practice vision is measured by the smallest visual angle under which 2 points are perceived separately, representing the minimum separabile. This can be a common measure for all eyes only if the equal retinal images correspond to equal visual angles in all eyes. To that end the accommodation must be excluded and, since ametropia generally is due to variations in the length of the visual axes, the correcting lenses must be placed at the anterior focus of the eye, i. e., 13 mm. in front of the cornea, which advances the nodal point in hyperopia and recedes it in myopia, thus equalizing the distance of the nodal point from the retina in all eyes of different refraction, so that equal retinal images correspond equal visual angles. To avoid the fractions of Snellen's measure, which is based on visual angle 1′ as unit, the visual angle 10′ as unit is preferable. Landolt shows the insufficiency of letters as optotypes and advocates the broken, straight or circular lines or rings in which the position of the break must be ascertained by the patient. Artificial light of certain uniform strength and for an equal distribution of light, test charts of the form of circles or squares are recommended. C. Z.

Tscherning's Spectacle Lenses.—Johnson, G. Lindsay, London (*The Lancet,* Oct. 28, 1905). These lenses were invented by Dr. Tscherning. The peculiarity consisted not in their being meniscus in form, but in one surface of each lens forming part of a sphere which had a common center with the cornea, while the other surface was curved to suit the various diopters of the converging and diverging series, identical in power with those in the oculist's trial cases. Owing to the peculiar form of these glasses all rays passing from the anterior principal point through the entrance pupil passed through the lens in a direction nearly normal to a tangent to the surface. This reduced the distortion and astigmatism to an almost imperceptible quantity, except in the case of very oblique rays. Mr. Johnson also showed two photographs of squares ruled on a large plane surface; the one taken with an ordinary lens having a diaphragm corresponding proportionately in size and position to the entrance pupil of the eye, the other taken with Dr. Tscherning's lens. The improvement in the image, the flatness of the field, and the absence of distortion and astigmatism were most marked. Mr. Johnson believed that such lenses would be found of great value to billiard players, riflemen, cabinet makers, and draughtsmen; in fact, in all cases in which high definition and rectilinearity were essential. C. H. M.

IRIS.

Contribution to the Etiology and Statistics of Primary Iritis.—Gutmann, Adolf (from the eye clinic of Professor von Michel in the University of Berlin, *Deutsche Med. Woch.*, 1905, No. 42, p. 1671). In 1891 Wagner found 50 per cent. of primary iritis, observed within 5 years at the eye clinic in the University of Wuerzburg, to be of tuberculous origin, while syphilis gave a small percentage. Seven years later Haas ascertained in 84 cases of primary iritis at the same clinic in 36.8 per cent. tuberculosis, in 5 per cent. syphilis. von Michel and L. Bach explained this from the preponderance of tuberculosis in that region. Gutmann reports on 150 cases of primary iritis in which the general examinations were made by Professor Litten and Professor Lassar. Forty-one were due to tuberculosis, 8 to nephritis, 20 to disturbances of circulation, 47 to syphilis, 5 to gonorrhea, 5 to rheumatism, in 6 several diseases were combined, and in 18 no positive general findings were detected. Gummatous iritis, due to hereditary syphilis, was seen in 3 infants, aged from 2 to 4 months. The higher percentage of iritis, due to syphilis, at Berlin than at Wuerzburg is attributed to the influences of the large city. Gutmann advocates careful general examinations as very important for the treatment.

C. Z.

Recurrent Iritis: A Study of Nine Cases.—Woods, Hiram, Baltimore (*Ophthalmic Record,* July, 1905). After making quotations from the accepted teachings of the present day, the author finds, in tracing back their gradual evolution, that mainly in three ways have views of the causation of recurrent iritis undergone change: 1. What was formerly put down as "idiopathic iritis," and even now must sometimes be so considered, is often an early manifestation of gout or rheumatism, may be hereditary, constitutional symptoms appearing at a later time. 2. Gonorrhea has not received its due recognition as a cause. 3. Posterior synechiæ have been given undue importance. In reviewing the *cause* he ascribes acute inflammatory rheumatism as being responsible for three cases, in two others there was the classical order of gonorrhea, arthritis and iritis. One was syphilitic. In another, "glare from water" is put down as the cause, and this case contracted gonorrhea with subsequent arthritis before the first recurrence. In another the primary attack could not be accounted for, but two years later she developed her only attack of acute inflammatory rheumatism, and two years after this iritis developed in her other eye, which recurred in four months. The cause in the remaining case was indeterminable. Twenty years before this man had gonorrhea. A few months after his first iritis he contracted syphilis. Prompt treatment was instituted, and the disease ran a mild course. In the 18 years since this infection there has been no evidence of lues, unless it be the recurring iritis. The author believes that it is very essential to correct errors of refraction and keep them accurately corrected, since the neglect of this by several of these patients has resulted in a recurrence of iritis. In none of these cases was there a return of the constitutional or local evidence of the original cause of the eye lesion. Iridectomy was performed in one case during an acute attack of iritis, and since then there has been no recurrence. In two other cases with exclusion of the pupil an iridectomy was performed, but did not prevent recurring attacks of iritis. The author's experience has been that the strict diet usually prescribed for the gouty and rheumatic does not prevent recurring iritis, and that unless there are other evidences of gout and rheumatism than the iritis general supporting treatment is preferable. He has found that the use of weak solutions of atropin as a prophylactic in two cases has served as the only means of preventing their recurring attacks of inflammation and pain. The nine cases are reported in detail.

M. B.

Iritis Tuberculosa as Diagnosed and Treated by Koch's Tuberculin.—Gamble, William E., and Brown, E. V. L., Chicago (*Jour. A. M. A.*, Oct. 14, 1905), give a complete history and description of a case of iritis tuberculosa where the use of Koch's new tuberculin treatment gave a diagnostic reaction and where its continued use resulted in a cure of the case locally and, later, freedom from temperature, increase in weight, etc. After stating their reasons for making above diagnosis and reviewing the literature on the subject, they state, among others, the following conclusions: There is very little question as to the value and reliability of tuberculin as a diagnostic agent. Failure to obtain the reaction on one injection, however, is not conclusive, and, according to Tinker, successive doses of 3, 6 and even 9 mg. should be used before tuberculosis be considered definitely excluded. However, they recommend that the very lowest possible dose be used in view of the profound general reaction which they have seen with a 5 mg. injection. The early view that its use caused a dissemination of the tuberculous material throughout the body has been very much modified. As to its therapeutic value, less may rightly be said, since far too few conclusive cases have as yet been studied and since much tuberculous disease of the eye has a more or less pronounced tendency to spontaneous healing. M. D. S.

Relapsing Gonorrheal Iritis.—Gendron, Lorient (*L'Ophtalmologie Provinciale,* April, 1905). This name is given by Gendron to what he affirms is a form of iritis which has not been hitherto described and of which he reports three examples. He considers the condition distinctive in that, while appearing primarily as a complication of gonorrhea, yet it presents a series of recidivations without the accompaniment of other fresh gonorrheic signs. Indeed, he says, after the original urethral disease had apparently long since disappeared.

The symptoms are those of an acute iritis associated with hypopyon and cloudiness of the vitreous humor. Notwithstanding the alarming appearances at the onset of these relapses, they yield promptly to the classic treatment and mercurials. Three cases are cited. In only one was there an arthritis. In none was there blenorrhea of the conjunctiva. In two there was a mild form of conjunctivitis without the presence of gonococci. In one instance the material constituting the hypopyon was examined with negative results.

The two theories as to the pathogenesis of this form of iritis are reviewed. The one, that it is due to the presence of the microbe itself in the eye, having gained access to the blood through the medium of the urethra, and the other, that it is the result of toxins which have been generated by the specific cocci. The author is inclined to the latter theory, and believes that the toxins once present in the organism are potent for harm until they are neutralized by an appropriate agent (which may be for a considerable time). He mentions as analogous the activity of the toxins of the tetanus and the diphtheria microbes which act long after the presence of the Nicolaier or the Loeffler germs have ceased to be demonstrable.

(It seems to the abstracter that the explanation given by Motais for gonorrheal iritis is more rational—that, be it caused by the microbes directly, or indirectly by its toxins, the presence of the microbe in the organism must coincide pretty closely with the time that the iritis supervenes. If this be at a late date from the initial lesion, it is because the germ has lain dormant till awakened by some unknown influence, rather than that the toxins could have remained so long uneliminated. The fact that mercury systematically administered or locally injected is a potent curative agent argues strongly for the Motais hypothesis.) C. H. B.

LACRIMAL APPARATUS.

Congenital Dacriocystitis (Pseudo-Conjunctivitis of the New-Born of Lacrimal Origin).—Pechin (*Archives d'Ophtalmologie,* August, 1905). Pechin states that, in the fetus, epithelial detritus fills the nasal canal as meconium fills the intestinal tube, and that this plug of nasal meconium is the cause of the trouble. Infection, from any cause, added to this, will produce congenital dacriocystitis.

In the case of congenital dacriocystitis with acute inflammatory reaction yielding to the expulsion of this plug, the pathogeny is indisputable. In other cases there is a slight obstruction causing an epiphora and a little mucopurulent discharge. The diaphragm which closes the lower orifice of the nasal canal may open late and be the cause of temporary impermeability. In the slight suppuration which follows this impermeability the author has found only the staphylococcus which distinguishes it from the lacrimal conjunctivitis of the new-born from pneumococcus of Parinaud.

In many cases the affection ceases spontaneously by the natural clearing of the lacrimal passages which may be aided by massage of the parts over the sac and the use of collyria. In persistent cases the only rational treatment is injection or catheterization of the duct. G. C. H.

DACRIOCYSTITIS FOLLOWING THE RADICAL CURE OF MAXILLARY SINUSITIS.—LEBLOND. (*Archives d'Ophtalmologie,* May, 1905.) The operation referred to is that of Caldwell-Luc. The sinus is opened in the region of the canine fossa, its walls are curetted, and the anterior inferior third of the internal wall is resected to secure drainage into the nose. The author thinks that due attention has not been given to the lower end of the lacrimal duct and the lacrimal complications that may result from its injury, and has met with several cases in which complete obstruction followed, and in which it became necessary to extirpate the lacrimal sac. He recommends operators to avoid the lacrimal apophisis in turbinectomy, to attack the inferior meatus two centimeters behind the anterior extremity of the cornet and to curette the anterior part of the sinus with great care. G. C. H.

ACUTE DACRIOADENITIS.—WICHERKIEWICZ. (*Archives d'Ophtalmologie,* June, 1905.) The author believes that acute inflammation of the lacrimal gland occurs more frequently than it is generally supposed to and that it is rarely recognized.

It occurs in two forms, one produced by traumatism, a chemical or thermic agent or a local infection. This form is monolateral and terminates usually by suppuration. The other appears as the result of a general infection and is caused by microbes or their toxins, most frequently follows la grippe, but occurs also in connection with malaria, measles, gonorrhea, secondary syphilis, and tuberculosis. This is generally bilateral, is frequently accompanied by a simultaneous inflammation of the salivary glands and usually terminates by resolution.

The general treatment depends upon the etiology. Quinin and antipyrin are advised in cases occurring in connection with grippe. Locally warm compresses and ointment of iodid of potassium. In cases of suppuration an early incision should be made in the skin of conjunctiva. G. C. H.

DACRIOADENITIS.—ORLANDINI, O. (*Annali di Ottalmologia,* 1905. pp. 302-327), describes a number of cases of dacrioadenitis which he has had occasion to study in the ophthalmic department of the Venice Public Hospital. His clinical observation was supplemented by bacteriologic and histologic examination of the lacrimal glands, removed in whole or in part. His experience has shown that the palpebral part of the gland is most liable to swell. He ascribes the propagation of the process to the blood vessels bearing the toxic and infectious cause either directly from the conjunctiva or from some more distant organ. In a woman who had succumbed to pleuropneumonia, the lacrimal glands contained Frænkel's diplococcus. An inflammatory process in the conjunctiva may also spread along outside the excretory ducts. In two cases in which the conjunctiva was affected with trachoma, the author observed the propagation of the process, once only as far as the excretory ducts, but in the other case to the parenchyma of the outlying part of the gland. In the non-suppurative forms of the affection, bacteriologic examinations were always negative. In the suppurative cases the findings were also generally negative, although occasionally pyogenic staphylococci were discovered. He is inclined to attribute this to the fact which others have established, namely, that the secretion of the lacrimal gland is peculiarly unfavorable for the life of micro-organisms. C. A. W.

LENS.

Etiology of Spontaneous Dislocation of the Lens.—Casali (*Annali di Ottalmologia,* 1905, pp. 361-378) reports the clinical history and the results of objective examination in two cases of dislocation of the lens into the vitreous, both observed in the ophthalmic clinic at Florence. Following the classification proposed in 1885 by Teillais, he refers these cases to the category of spontaneous, non-traumatic dislocation; that is, occurring in emmetropic eyes without advanced disease and without trauma. He accepts as the etiologic factor the changes in the cardiovascular apparatus noted in both patients (arteriosclerosis), which entailed nutritional disturbances in the zonula. He adds the history of a case in which the lens became secondarily dislocated, passing into the anterior chamber. The patient was a young man with cataract in one eye. The cataract was reduced in size and the lens slipped into the anterior chamber, causing secondary glaucoma. C. A. W.

LIDS.

Tuberculous Tarsitis.—Rollet, Lyons. (*Archives d'Ophtalmologie,* June, 1905.) In addition to the classical forms of granular tuberculosis, vegetating or ulcerous, of the palpebral conjunctiva, the author calls attention to a deep tarsal form. In syphilitic tarsitis a diffuse gummatous infiltration of the whole tarsus (which yields rapidly to specific treatment), is noted. Tuberculosis may also cause infiltrations whose clinical aspect closely resembles that of the specific form.

A married woman, 27 years of age, with two healthy children and no suspicion of syphilis, hereditary or acquired, applied at the Hotel Dieu with an affection of the left eyelid which had commenced four years before with an acute conjunctivitis and swelling and redness of the eyelid. In spite of treatment the upper lid increased steadily in size and drooped more and more. The upper lid was slightly red, swollen and very thick and the patient was unable to raise it sufficiently to see with the eye. It was uniformly thickened and of woody hardness. When it was everted the tarsal conjunctiva presented numerous rounded, grayish granulations the size of a millet seed, having the appearance not of trachoma, but of little, tubercular vegetations. The cul-de-sac, the limbus and the cornea were normal, as were also the nasal cavities and the lungs.

The vegetations were excised, a longitudinal strip of the tarsus was resected and the thermocautery was applied at several points, then friction with oil of biniodid of mercury. At the end of three weeks the lid had resumed its ordinary size.

Microscopical examination showed an inflammatory tuberculous tissue which had originated in the tarsal conjunctiva and had progressively invaded the fibrous tissue and the glands of the tarsus.

The author considers general treatment in tuberculous tarsitis as only an adjuvant and believes that energetic surgical intervention is necessary. G. C. H.

MATERIA MEDICA AND THERAPEUTICS.

Radium in Trachoma.—Beck, Joseph C., Chicago. (*Annals of Ophthalmology,* July, 1905.) Three cases are reported, one of subacute trachoma, one of trachoma with pannus, and one of acute trachoma. All were completely cured, except the acute trachoma which is still under treatment and is almost well. The author does not give the radio-activity of the tube he used, but says it cost $100 delivered in Chicago, but states that not less than 50 milligrams of 10,000 radio-activity should be used, and the stronger the radio-activity the better results will be obtained. The method of application is by placing the hermetically sealed tube in contact with the tissues for from ten minutes to half an hour at each sitting, which may be daily or less often. He has never seen any burns resulting from its use, but has seen severe reaction. The latter, he thinks, may have been as much from the mechanical irritation as from the action of the radium. M. B.

On the Action of Roentgen Rays on the Trachoma Follicle.—Stargardt, K., Kiel. (From the Eye Clinic in the University of Koenigsberg, in Pr. *Zeitschrift fuer Aug.,* 1905, xiv, p. 251.) The results of Heinecke, who after applying x-rays for one-quarter of an hour, saw striking changes in the spleen and other lymphatic organs of the rabbit; viz., disintegration of lymphocytes, reception of the débris of the nuclei into phagocytes and finally more or less disappearance of the follicles, were for Stargardt the incentive to treat trachoma follicles with x-rays. He obtained similar results. An application in a soft tube for 12 minutes, 7 cm. distant, is perfectly harmless for the conjunctiva. The eyeball had to be carefully protected by a spoonlike plate of lead, as well as the face. Stargardt treated three cases of fresh trachoma without scars. The retrotarsal folds were excised for microscopic examinations after 14 days, after 30 and 16 hours. In the case observed for 14 days, a marked shrinkage of the granules to one-third of their volume was noticeable from the third day. Microscopic changes were found only in the follicles; most intense in the piece excised after 16 hours; traces in that excised after 30 hours, none in the one excised after 14 days. Besides the débris of the nuclei, of varying sizes, Villard's giant cells, otherwise rare, were multiplied, mitoses decreased. The process is terminated after 24 to 30 hours, analogously to Heinecke's observations on the spleen.

Stargardt concludes that the treatment of trachoma with x-rays may be of therapeutic value, but shares the opinion of Prof. H. Kuhnt, that it can have only a limited value, and is, especially in trachoma regions, inferior to operative measures, on account of the danger of reinfection. C. Z.

THE COSMETIC ADVANTAGES OF HEALING PALPEBRAL CARCINOMA BY THE USE OF RADIUM RAYS AND THE METHOD OF ITS USE. —KIRCHNER, Bamberg (*Die Ophth. Klin.*, No. 10, 1905), the case treated by the author was one of ulcerating cancroid of the temporal portion of the lids, measuring 17x14 mm. The patient was a female, 67 years of age. Twenty years previously a small growth had been excised from the same situation. Recurrence had shown itself about one year ago. The treatment was undertaken with a 1 mg. mass of radium bromid which affected an area 3 mm. in diameter. Seances were from 15 to 25 minutes at intervals of from two to three days, each time to a different portion of the growth. In about six weeks' time the entire surface of the growth had been radiated at least once, without material improvement. After a lapse of about three weeks without treatment, the surface was skinned over, but still surrounded by an infiltrated mound. This was treated for ten days with the ultimate result that the entire growth was converted into slightly congested, delicate, soft scar tissue. At the conjunctival margin of the inner canthus there were two hempseed-sized masses. The action of radium rays is found to be much more rapid and intense upon young, embryonic and luxuriant tissue, both of plant and animal life, than upon healthy tissues. At first no apparent effect is noted upon the cells but after a period of latency there is diminished growth activity, partial atrophy and malformation and finally death of the cell, or of the entire organism takes place. This affinity for relatively rapidly growing cells the author considers the most important guide in its employment. The weakest dose that will affect the pathologic tissue must be determined and used, so as not to affect the surrounding normal structures. W. Z.

Radium in the Treatment of Trachoma.—Falto, Marezel. (*Weiner Medizinische Wochenschrift,* July 29, 1905.) Two cases of severe trachoma and one of follicular conjunctivitis were treated with radium, not as Prof. Cohn suggested, by attacking each follicle separately, but by massaging the infiltrated conjunctiva with a rounded glass tip in which 1 mgm. of radium-bromid was placed.

In the first case radium was used for 162 minutes, in the second 78 minutes, in the third case 24 minutes. The application of the radium in the manner mentioned caused not only the disappearance of the granules, but also the resorption of the trachomatous infiltration. The second case was complicated by a pannus, which was also favorably affected by the treatment of the infiltrated conjunctiva. J. G.

The High Frequency Current in Non-Toxic Amblyopia.—Coover, David H., Denver. (*N. Y. Med. Jour.* and *Phil. Med. Jour.*) The writer reports nine cases of congenital amblyopia with normal fundus and media, in which permanent improvement in vision of about one-tenth immediately followed the application of the high frequency current; after six or seven sittings the maximum possible vision was reached. The ages of these patients ranged from 19 to 45; the vision averaged an increase from 6/24 before treatment to 6/10 after treatment; in all these cases improvement has continued.

These cases were tested and examined before the publication of Heine's article, "Scotoma in Amblyopia," hence the effect of the current may have upon the scotoma is as yet undetermined.

In order to understand high frequency apparatus, it will be necessary to call to mind two facts: First, that when, as in Ruhmkorff's apparatus, the circuit is made or broken in a primary coil, a current is set up in the secondary coil of a tension many times greater than that of the original current. Second, that when the conducting wires of the tin foils of a Leyden jar are brought together and a spark results, the electricities in the spark are in reality flashing to and fro at a rapid rate until the equilibrium between the tin foils becomes established. The current reversals produced by discharging Leyden jars are exceedingly rapid. It has been proved that they take place at the rate of 100,000 to 1,000,000 times a second. This high frequency current from the jars is of gradually decreasing intensity, but if the Leyden jars are continually recharged from a Ruhmkorff's coil, a permanent high frequency, high tension current can be supplied. Now, while 2,000 volts at a frequency of fifty times a second are fatal, these high frequency currents not only are not harmful, but give rise to no disagreeable sensations. Currents may be taken from the main storage batteries, or bichromate cells of about 6 ampères intensity. A rheostat, an interrupter, a Ruhmkorff's coil, Leyden jars, and vacuum tubes are the essential elements of all high frequency apparatus.

The interrupters which have been found most practical are of the electrolytic type, the Weynault or the Caldwell-Simon; the former consists of a platinum rod for the positive and a lead plate for the negative pole, which are immersed in a dilute solution of sulphuric acid.

While no case failed to be improved with the high frequency current, the number which regained normal vision is comparatively small; some of the latter may have some lesion outside the retina; a certain number of the amblyopias remaining unimproved may be due to retinal hemorrhages or injuries to the eye during labor. C. H. M.

THE COMBINATION OF ACTIVE WITH PASSIVE PNEUMOCOCCI IMMUNIZING.—RÖMER, Wurzberg (*Arch. f. Augenheilk.* B. lii. H. I and II) states, as the result of continued experimental and clinical research, that in his judgment the future must decide many points.

It remains to be seen whether the past findings of the author are to be confirmed. In serum therapy one must, more than in any other field, be prepared to obtain accidental and variable results. Clinical results must be published from year to year. It will be the task of colleagues to investigate whether the analogue of these conditions is to be found in other fields, or, if not, in what manner they deviate. While in principle the combination of active with passive immunizing has already been worked out and while from the theoretic viewpoint of the immunizing experimenter the practicability of the method must be accredited, it is extremely doubtful whether these expectations will be realized in practice. We find

in ulcus serpens that only a relatively small percentage of the cases are from the beginning uncontrollable and rapidly spreading. It does not present unfavorable conditions for treatment by active immuninizing. There are infective diseases of mankind in which even after the outbreak of the disease an active development of immunizing organisms may be brought about in time to arrest the process. The author, reasoning from this analogy, has undertaken to bring about the same result in incipient ulceration. He does not consider it settled that such supplemental injections are without result. It is not to be doubted that active immunizing may still be in many ways varied. Not once did the single injection of the author's culture induce pronounced fever or other general disturbance, and for this reason we must consider whether an eye endangered by an ulcus serpens could not be saved if we could employ one or more injections and thus institute general immunizing reaction and hasten the development of immunity. Relative to active immunizing data are wanting to determine whether the subcutaneous injection of the serum has not advantages over intramuscular injections. The author has inaugurated anatomical investigations into the resorptive relations of bacteria by these methods, but believes that the determination for mankind must be made through clinical experimentation, and for this reason would request that clinicians make careful observations regarding the relative efficiency of the two methods for incipient cases of ulcus serpens. The possibility of mixed infection must be taken more into consideration. It is especially desirable to have data as to which toxin must be dealt with operatively and in which one we may await cleaning of the ulcer. The agglutinating power of the author's serum affords a means of determining, biologically, the different varieties of pneumococci of these ulcers. The remarkable differ-
cornea or the disposition to malignancy lies within the cornea or
vidual varieties have different degrees of virulence for the human
ence in malignancy can be due to three factors, either the indi-
within the general system. W. Z.

ON THE EMPLOYMENT OF DOYEN'S ANTISTAPHYLOCOCCUS SERUM IN OCULAR THERAPEUTICS.—BERARD, Angoleme. (*l'Ophtalmologie Provinciale,* June, 1905.) This article is prefaced with the remark that bacteriotherapy is now so much in favor that every day sees the birth of a new medicament based upon the action of ferments, yeasts, and diastases. Of these the yeast of beer is the first in date, and, although it has been abandoned in the treatment of scarlatina, diphtheria and cancer, for which it was first extolled, it is incontestable that it has often proven a power in the treatment of staphylococcic affections. It is further affirmed that a study of the long list of microbian antagonists furnished by the laboratory offers but two settled facts: viz., the action of the pyocyanic bacillus upon the bacillus of carbuncle, and that of saccharomyces upon the staphylococcus; this latter the habitual attendant of suppurations, and, as concerns the eye, of styes, furuncles, humid eczema of the lids, and often conjunctivitis, keratitis and dacryocystitis. The author quotes Doyen as saying that "it was the inconstancy of the effects of the fresh and the dried yeast of beer that led to the isolation, from the most active yeasts, of the special albuminoid substances which form the base of the antistaphylococcus serum." Berard's only criticism of the "serum" is of its name—as misleading; giving rise to the impression, in some minds, that it is a liquid obtained from the blood of an immunized animal. The dose is 5 c.c. for adults and 2½ c.c. for children of 4 to 14 years of age. The injections are made deep into the muscles of the buttocks. They are not painful, and do not produce any special inconveniences; merely a slight numbness of the leg, and tingling, with marked elevation of temperature after a few hours' time. Five injections, with four-day intervals, served the author to cure a case of obstinate, profuse chronic suppuration of the lacrimal canal in a child of 12 years of age. Seven injections in a similar case in a woman whose lacrimal canal had been treated by other methods, for three years, were also successful. Equally good results were obtained in cases of keratohypopyon. (It may be mentioned, however, in passing, that at the time of each injection in the lacrimal cases, the canal was washed out with an antiseptic solution, and in those of "keratohypopyon," both paracentesis and cautery of the cornea were employed.

The author regularly injects the serum as a preventive of suppuration before extractions and iridectomies when there is any reason for apprehension. He claims like success for his colleagues who have tried the remedy and method. True, he says, he has met with failures, but he thinks that these would have been less numerous had it been always possible previously to make microscopic examination of the pus. Yet he has employed the serum, he states, in cases of suppurative dacryocystitis in which never more than once had staphylococci been found. He believes that the remedy can render great service, curative and preventive, in the treatment of ocular affections because of the virulence of the microbe in question and its predilection for this locality. C. H. B.

A Case of Ocular Tuberculosis Cured with Marmorek's Serum.—Schwartz, Gleiwitz (*Deutsche Med. Woch.*, 1905, No. 34, p. 1346). A boy, aged 16, developed, 4 weeks after pieces of soil had been thrown into his right eye, an intense conjunctivitis, presenting the aspect of violent trachoma. The histologic examination by Professor Ponfick proved typical tubercles and tubercle bacilli, which was further corroborated by inoculations of guinea-pigs. The affection was entirely cured by 37 subcutaneous injections of, in all, 289 c.cm. of Marmorek's antituberculous serum. Schwartz adds a review of the frequency of ocular tuberculosis from literature. Rokitansky saw no case of tuberculous conjunctivitis in 14,000 tuberculous individuals. Hirschberg saw 12 cases of ocular tuberculosis out of 60,000 eye patients. Mules one out of 30,000, Machek 3 out of 40,000.

So far only the surgical treatment of tuberculous conjunctivitis was accepted, which in this case would have meant removal of the eyeball, lids and lymphatics as far as the clavicle. Therefore, Schwartz calls attention to this remarkable success with Marmorek's serum. C. Z.

Subconjunctival Salt Injections.—Risley, S. D., Philadelphia (*Jour. A. M. A.*, Aug. 12, 1905), says that in many hundreds of injections he has not seen an instance of inflammatory reaction, or any thickening of the conjunctiva or subconjunctival tissues, or any adhesion of the tissues to the sclera, even when the injections had been made daily or on alternate days continuously for many consecutive weeks. He reports cases to illustrate groups of diseased conditions where the method has proved valuable. He points out that the beneficial action is not due to osmosis or to dialytic action, nor to the antiseptic influence of the injected fluid, but largely to the protective influence of the serum albumin poured out into the acqueous humor. Also it is probable that the injection of neutral, saline solutions of low specific gravity rapidly dilates the channels of exit and at the same time dilutes their contents, and so by a rapid diffusion of fluids hastens the flow of the diluted lymph and albuminoid substances through their normal channels. It is probable, also, that the emptied spaces are at once refilled by a fresh supply from the original sources which will be richer in albuminoid substances and, withal, would carry a fresh nutritive supply to the tissues. In addition to the subconjunctival injections, the prolonged application of saline stupes has been found very useful.

M. D. S.

Subconjunctival Injections of Salt.—Beck, Wurzberg (*Arch. f. Augenheilk.*, lii-3), gives the comparative results obtained in the treatment of a series of cases of intra-ocular diseases with and without subconjunctival injections of salt. Of 11 cases of vitreous opacities treated without, there was improvement in 4, and, of 8 with, improvement in 7. Of 5 cases of chronic chorioiditis treated without, slight improvement in 2, and, of 14 with, improvement in 10. Of 6 cases of detachment of the retina treated without, improvement in none, and, of 13 with, improvement in 6.

W. Z.

Thigenol in Ocular Therapy.—Fortunati (*Annali di Ottalmologia,* year xxxiv, Nos. 7-8, 1905). Thigenol is made up of sulphur and soda in oil. It is obtained in solution from organic sulphur from the reduction of sulphuric acid by means of the oil of sweet almonds. It is a thick, brown-red oil, almost odorless, soluble in all proportions in water, alcohol and glycerin. It can be incorporated with vaselin, lanolin, etc. The actions of the drug are antiseptic, resolving, analgesic and keratoplastic. The author recommends it for eczema of the lids—salve 5 to 10 per cent., blepharitis marginals—salve 10 to 50 per cent., blepharitis ulcerosa—salve, 10 per cent., rubbed into the edges of the lids and gauze smeared with the salve, from 10 to 60 per cent., left on all night. The next morning the lids are carefully cleansed with an alkaline solution and pure thigenol used. The results of this treatment are excellent, a cure sometimes resulting in 25 to 40 days. In keratoconjunctivitis eczematosa the drug is useful in 5 per cent. solution. Deep ulcer of the cornea yields to a solution in glycerin, 10 to 50 per cent. The pain is relieved and usually the ulcer cleans off in 5 or 6 days. In different forms of conjunctivitis—Weeks, Morax—the drug is useful in 3 to 5 per cent. solution. R. H. J.

A Clinical Study of the Relative Actions of Atropin and Homatropin as Cycloplegics.—Wilkinson, Oscar, Washington (*Therapeutic Gazette,* July, 1905). In order to get the opinions of some of the best known men in the profession, there were mailed a series of questions upon the comparative merits of atropin and homatropin. Oliver, Risley, Reber, Burns, Robin and Ellett do not use homatropin as a routine practice, while Weeks, Savage, Jackson and Wood consider homatropin an efficient cycloplegic. With the exception of Oliver, Reber, Burns and Robin, all the other men above mentioned use homatropin extensively, if not entirely, except in difficult cases. Savage does not use atropin. The author analyzes the comparative effect of the two drugs in 50 cases, or 100 eyes. These were all private cases. Homatropin was first used, and atropin later on because the glasses prescribed under homatropin findings did not give relief. A table is arranged, which, when analyzed, shows there was an increase of .25 D. or more in 56 per cent. and increase of .50 D. or more in 19 per cent. The results were identical, or less than .25 D. in 52 per cent. The axis of astigmatism was changed in 13 per cent., and there was an increase of astigmatism of .25 D. or more, or change of axis of same, in 32 per cent. The author does not tell us if all these cases were satisfied with the lenses prescribed under the atropin findings. His conclusions are: 1. That homatropin is not in any way as efficient a cycloplegic as atropin. 2. That the solution of one grain to one drachm (.06 to 4.00), one drop in the eye every three to five minutes until eight or ten instillations are made, seems to be as efficient and safe a solution as any. 3. That homatropin usually, if not always, is inefficient in cases that suffer a great deal from eyestrain, whether there is any indication of retinal or chorioidal congestion or not. 4. That it is advisable to use homatropin in cases between the ages of 20 and 40 where a cycloplegic is used, provided there are no marked symptoms of eyestrain; at the same time it is advisable to inform the patient that the examination is only tentative, and they may have to return for further treatment under atropin. 5. That homatropin is especially indicated in cases that do not suffer severely and have no time to lose from work. 6. That homatropin is not efficient in children. 7. Homatropin is unrivaled in elderly subjects as a mydriatic for fundus examinations. 8. Homatropin is to be commended in troublesome cases above the age of 40. M. B.

ALYPIN, A NEW LOCAL ANESTHETIC.—SEELIGSOHN, W., Berlin (*Deutsche Med. Woch.,* 1905, No. 35, p. 1396), concludes from his results with a 4 per cent. solution: Alypin seems to be an excellent anesthetic for ophthalmic practice, as it has the same anesthetic action as cocain without causing mydriasis, disturbance of accommodation, increase of tension, drying of the cornea or intoxication. It is manufactured by the Elberfelder Farbwerke.) C. Z.

SILVER SALTS IN OCULAR THERAPEUTICS.—LIBBEY, GEORGE F., Denver (*Colorado Medicine,* October, 1905), advocates the use of the newer organic salts of silver, especially argyrol and protargol, in those diseases of the eye in which a silver salt is indicated.

He considers the use of argyrol and protargol in 20 to 25 per cent. sol. as effective as 2 per cent. nitrate of silver as a prevention of ophthalmia neonatorum, and recommends the use of protargol in all cases of the new-born, and argyrol in all cases of gonorrheal ophthalmia of the adult.

In ophthalmia neonatorum the author gives preference to protargol or argyrol on account of the slight amount of irritation following their use and not on account of any greater penetrating or germicidal effect. W. R. M.

ACTION OF SOME RECENT DISINFECTANTS, ESPECIALLY OXYCYANATE OF MERCURY ON INFECTED INSTRUMENTS.—KOEHLER, Bruno (From the eye clinic in the University of Marburg, *Zeitschrift fuer Aug.*, xiii, p. 542). Oxycyanate of mercury is less powerful than sublimate, e. g., 1/500 sublimate destroys staphylococci after 15 minutes, oxycyanate after 3 hours, but is 3 times less irritating to mucous membranes. Koehler's experiments show that its bactericidal action commences at a concentration of 3 to 5 per cent. and is not very encouraging. It is rather expensive, but has one advantage, as it does not injure the hands and protects the instruments from rust. In the clinic at Marburg it is used in place of physiologic salt solution. C. Z.

INDICATIONS FOR THE USE AND THE DOSE OF MORPHIN.—SOMMER, Niedermendig (*Woch. f. Therap. u. Hyg. des Aug.*, No. 43, 1905), directs attention anew to the fact that in patients suffering from intracranial affections, accompanied by a certain blunting of the cerebral functions, especially in meningitis, the cerebral paralyzing effects of morphin is greater than when the brain is normal. He cites an instance where an adult with marked meningitic symptoms, but with full consciousness, became unconscious and remained so until death after a single subcutaneous injection of 0.015 morphin. His experience has taught him to use morphin and like-acting drugs with the greatest caution in brain affections, especially in the young, and in meningitis of non-alcoholics. W. Z.

CONTRIBUTION TO THE THERAPY OF HAY-FEVER CONJUNCTIVITIS.—KUHNT, W., PROF., Koenigsberg (*Deutsche Med. Woch.*, 1905, No. 34, p. 1345). Kuhnt saw, in a case of severe conjunctivitis from hay fever, excellent results from dusting anesthesin (Ritsert) and boric acid, 1:1, into the conjunctival sac, and recommends this treatment for further trials. C. Z.

SUPRARENAL EXTRACT IN IRITIS.—TREUTLER (*Wochenschrift für Therapie und Hygiene des Auges*, March 2, 1905), reports a case of recurrent rheumatic iritis, with almost complete ring-form synechia, which improved rapidly under sweating, aspirin, heurment the suprarenal extract was discontinued. The following day, teloupe, scopolamin and suprarenal extract. As a matter of experione hour after scopolamin was used, the eye became acutely glaucomatous. Four hours later the tension was + 2, the cornea was steamy, and there was severe frontal, alveolar and occipital pain.

One drop of suprarenal extract was instilled, which gave almost instant relief. Tension became normal, the injection subsided, and the pain left; the synechia remained unchanged. The case was successfully continued without the use of scopolamin, and with the careful application of suprarenalin.

Treutler considers this case as proving the claim of Wessely, based upon animal experimentation, as to the favorable action of suprarenal extract in cases of iritis with increased tension.

H. V. W.

ON THE SUPERIORITY, FROM THE ESTHETIC STANDPOINT, OF THE TREATMENT OF CANCER OF THE EYELIDS BY RADIUM, AND THE TECHNIC OF THE METHOD.—KIRCHNER (*La Clinique Ophtalmologique,* Aug. 25, 1905). The oculist, Kirchner states, has often to treat carcinomata of the lower lid which is often the site of rodent ulcer. The patient often presents himself when the tumor has invaded the whole thickness of the lid, especially at its border. A plastic operation upon the lid brings the question of cosmetic effect into consideration, and it is not always possible to have a satisfactory result, and Kirchner desires to call attention of oculists to the treatment of these neoplasms by the new rays. Guibert and Geriteau, in No. vi of *La Clinique Ophtalmologique,* published a report on the treatment of inoperable carcinomata of the lacrimal sac by *x*-rays, and the result was remarkable, but a violent dermatitis was produced. In a case of Kirchner's also it was found that an active *x*-ray skin inflammation occurred. In consequence of these unpleasant results from the use of *x*-rays, the treatment by them can not be utilized safely and satisfactorily by oculists, while, on the contrary, the radium can be applied with safety. Kirchner reports a case in detail. A woman, aged 67, consulted him Oct. 21,, 1904, for a cancerous ulcer at the temporal angle of the eyelids. The tumor was 17 mm. long and 14 broad; its surface was covered by a sanious coating and its borders were elevated and infiltrated. The growth had partly destroyed the lateral ligament of the lids and had involved the whole thickness of the lids at the temporal end. No glandular involvement was apparent. Twenty years previously the patient had been operated for a small growth which returned, and a plastic operation was done after a second removal by the knife. The patient fearing the result of any further operation, Kirchner decided to use the radium treatment. Possessing a milligram of radium bromid, he made the application upon a surface of 3 mm., every two or three days exposing a new portion to the radium for fifteen or twenty minutes or more. Since December 2, after twenty applications, Kirchner had exposed each portion of the lesion to the radium influence without any definite amelioration, and he temporarily abandoned the treatment. On December 20 it was found that the surface of the tumor was covered with skin without any gaps or crusts. The infiltrated border was smoother and the induration was gone. A second series of applications was made, each lasting twenty or twenty-five minutes. At the end of December treatment ended, and on January 12 the infiltration had disappeared. At two points two minute granulations were still visible, but they have since disappeared. The final result was excellent; in place of the tumor was a cicatrix, slightly red, soft and easily mobilized. There was no cicatrix of the conjunctiva. A remarkable effect was visible at the external angle of the lids, which, as it were, later had been rebuilt. Kirchner considers it important that there should not be prolonged applications of the radium; that the radium should touch all the neoplastic cells. Although his observations teach him that the radium action is not entirely limited to those cells of the region directly exposed, but to other neoplastic cells apparently beyond the influence. Still it is well, Kirchner believes, to subject each portion of a growth to the direct effect of the radium salt. The powder of the radium bromid is obtained in ebonite capsules several cm. in diameter. The author has had made a small capsule of tin 6 mm. long and 4 broad and 2 thick; in this is placed a small block of lead, and in the middle the radium is placed. In the lead is a small window closed by mica; the radium being surrounded by the lead everywhere except at the mica window. No moisture should be admitted to the radium, and when not in use it is to be shut up in a gutta percha box. B. E. F.

THE TREATMENT OF CUTANEOUS CANCER BY RADIUM.—REHNS and SALMON (*La Clinique Ophtalmologique,* Sept. 10, 1905). The authors state it is a classical fact that radium is comparable with the Roentgen rays in the treatment of cancer, but that the radium treatment seems to be reserved for small tumors, while the x-rays are applicable for larger growths. The object of the authors is to show that with radium it is possible to remove cancerous tumors which measure 4 cm. in diameter.

The first case the authors report was one of cancer of the lip; this was cured after six applications with their cell of radium, the length of the treatment going through seventy days. The final result was remarkable from all points of view. The cicatrix was apparent, but the lip was not deformed. There was no doubt as to the cancerous nature of the growth, there being in existence an enlarged lymphatic gland beneath the inferior maxilla before treatment was commenced. The second case was one with a larger growth on the wing of the nose, the patient being an aged woman. The tumor was a thick budding neoplasm 3.5 cm. in diameter. Patient refused all surgical interference. The growth disappeared after seventy-six days' treatment of fourteen seances of radium application, leaving a very slight trace of the pre-existing condition. Locally the cure was perfect.

The authors state that radium (30 milligrams of the bromid) is placed in a circular metallic case with a mica window. B. E. F.

INTRAOCULAR INJECTIONS OF CYANATE OF MERCURY.—BLANCO, T., Valencia (*Archivos de Oftalmologia,* August, 1905). Being convinced that an intraocular injection would place the antiseptic or remedy in immediate contact with a pathologic lesion, and hence be more effective, Blanco has followed this practice in some desperate cases, three of which he relates, with the results obtained.

The first was one of extensive traumatic ulcer of the cornea, hypopion and threatening ocular phlegmon. Vision quantitative. Daily hypodermic injections of merc. cyan. did not improve the condition. As the case was desperate, the other eye long since lost, a half c.c. of merc. cyan., 1-1000, was slowly injected into the globe, the needle entering between the superior and external rectus somewhat anterior to the equator; moderate reaction. Three days later improvement; another injection. The ulcer cicatrized, the hypopion disappeared, gradual resolution; patient discharged three weeks later, the suppurative process arrested, but vision entirely lost.

The second was one of inflammation in an atrophic left eye, accompanied by sympathetic symptoms in the right; photophobia, epiphora, peripapillar edema, distended veins, etc., vision 1/8. Sodium iodid, purgatives, mercurial inunctions to salivation. Bearing in mind reported cases of ineffectual enucleation in similar conditions, it was decided not to remove the offending left eye, but three intraocular injections, 1 c.c., were made at intervals of two or three weeks. Discharged, with right vision 1/2, left phthisis bulbi.

The third case appeared with a severe inflammatory condition in an eye having an old, extensive, adherent leucoma; ocular phlegmon threatening. Intraocular injection (an entire syringe) followed a few days later by perforation, escape of lens, vitreous infiltrated with pus. H. M. F.

The Treatment of Spasm of Accommodation with Cocain.—Reina, Madrid (*Archivos de Oftalmologia,* October, 1905). Accomodative spasm is considered to be a neurasthenic condition peculiar to adolescence which appears principally in students and seamstresses after prolonged fixation. It may be either essential or reflex in origin; the principal causes of the latter being dental caries, intestinal worms, uterine displacements, etc. It causes a certain degree of myopia from the nearly permanent contraction of the ciliary, and, after prolonged fixation, it frequently culminates in a violent and painful spasm, accompanied by contraction of the orbicularis and some of the facial muscles.

The local treatment, strong mydriatics as generally used, has the disadvantage of the patient being compelled to suspend all close application, as well as the trouble resulting from the mydriasis. On account of these inconveniences Reina has used for some time a 5 per cent. solution of cocain, instilling it each night on retiring, which acts as an antispasmodic, paralyzing the accommodation during the night, and so preventing the violent reaction during the day, enabling patients to use their eyes without the aid of lenses. He reports satisfactory results from this treatment being continued for 8 or 10 days, and says it can be followed with impunity during 3 or 4 months. Atropin is advised in very obstinate cases only. General treatment should be looked after; when the spasm is reflex in origin its cause should be treated. H. M. F.

MUSCLES.

Muscle Testing in Refraction.—Koyle, Frank H., Hornellsville, N. Y. (*Ophthalmic Record,* September, 1905). The author believes there is a growing dislike to the use of cycloplegics by the laity. He has, therefore, worked out a method of determining the full refractive error of the eyes by associating with the usual refractive tests frequent tests for heterophoria. He assumes that small errors of muscle balance will, by exciting ciliary spasm, render it impossible to estimate the true error of refraction, and, *vice versa,* that ciliary spasm will cause a manifest heterophoria. In this report he makes no mention of minus lenses, but operates entirely with plus lenses. What he would do in myopia we do not know. His method consists in raising the vision to the highest point possible with plus spheres and cylinders. Determination of the muscle balance before and after this test will show a decided decrease in the heterophoria. If hyperphoria remains more *plus* is added until vertical orthophoria is obtained. If lateral heterophoria remains, still more *plus* is added to produce lateral orthophoria. The phorometer is now removed and the patient requested to read at once the 15/10 line. If he fails to do so after looking for a reasonable time, the spherical correction is slowly reduced until he can. If the phorometer still shows heterophoria, there is latent hyperopia. If the imbalance is principally vertical the phorometer prisms are turned to indicate hyperphoria, and the patient, with his full correction on, is asked to continue looking at the candle flame. In a few moments more spherical is added; it is now usually found that it requires more spherical than was at first used to secure equilibrium. On now removing the phorometer, it will be found that the patient reads 15/10 easily. Eighteen cases are then reported, illustrating the method as well as showing the results obtained. M. B.

THE CORRECTION OF EXOPHORIA BY DEVELOPMENT OF THE INTERNI.—ROBERTS, W. H., Pasadena, Cal. (*Journal A. M. A.*, Aug. 12, 1905), recommends the necessity of determining the muscle balance in all refraction cases, and emphasizes a method of relieving the vast majority of cases in which exophoria exists. Most authorities are agreed that from one to two degrees of esophoria, owing to the slight excess of convergence, will enable the eyes to be used for near with greater comfort than will a condition of orthophoria. He claims that in errors of refraction associated with hypermetropia, when exophoria is present, the amount of the plus sphere must be very considerably reduced or omitted, as slight amounts of uncorrected hypermetropia are an incentive to convergence and aid in overcoming the exophoria. At the office weak prisms, bases out, are put in the trial frame and the strength rapidly increased until the patient has difficulty in keeping the point of light (or candle) single. He is then told to close his eyes, slightly stronger prisms are inserted, and on opening his eyes he looks at an ivory ruler which is carried across the room, when his gaze is quickly transferred to the point of light. The prisms are gradually increased in strength until the patient is able to overcome 30° to 50°. He supplements the office treatment with exercises at home. The patient is given a pair of eight- or ten-degree prisms, mounted bases out, in a properly fitting, straight-temple spectacle frame and is carefully instructed in their use. If alone the patient slowly backs away from a lighted candle, keeping the eyes and mind strictly on the light. The prisms are then removed and not replaced until ready to start on another pilgrimage. In the beginning, these home exercises should be gone through with morning and evening, the time occupied being about ten minutes. As the muscles strengthen, once daily will suffice. The exercises must be persisted in until the Maddox rod will show from one-half to two degrees of esophoria for distance, and the von Graefe test shows orthophoria for near. A moderate degree of exercise should be maintained for an indefinite period after the methodical exercises are discontinued. M. D. S.

UNILATERAL TRANSITORY PARALYSIS OF THE ABDUCENS.—WIENER, MEYER, St. Louis (*Jour. A. M. A.*, Aug. 26, 1905), remarks the comparative frequency of paralysis of the sixth nerve in ophthalmic practice, which may be unilateral or bilateral, and mentions the causes. One etiologic factor, hysteria, has been questionable and created considerable controversy. He thinks we have indisputable proof, as evidenced by cases reported by many authorities, and describes four cases of unilateral abducens paralysis, which were transitory in character and not associated with paralysis of other ocular nerves or with any tangible disease of any sort. He maintains that these cases prove that a functional (or hysterical, if you will) paralysis of the abducens does occur; that it may be unilateral or bilateral, and that there need necessarily be no other hysterical signs or symptoms evident. M. D. S.

A CONTRIBUTION TO THE STUDY OF STRABISMUS, WITH SPECIAL REFERENCE TO THE OPERATION OF PANAS FOR ITS RELIEF.—PECK, EDWARD S. (*The Postgraduate*, July, 1905). As a preliminary to the subject, the nature of strabismus is described and the teachings of Helmholtz and Donders with regard to it reviewed. Javal's work, too, in this line, the importance of astigmatism and of anisometropia, as well as his suggestions as to orthoptic training, are mentioned. There have been two periods of the history of the study of strabismus: The one dates from the teachings of Stromeyer and Dieffenbach, in 1838, when squint was recognized as a muscular deformity. The other was initiated by Helmholtz and elaborated by Donders. By them squint was regarded as an optical anomaly and due chiefly to hyperopia and the normal habit of convergence. Each theory carries its own therapeutics. Some space is also given to Worth's theory of the fusion sense and to Landolt's views on the importance of advancing ocular muscles rather than tenotomizing.

Operative treatment having been decided upon, what is the best method of operating? There have been quite a number of modifications of simple tenotomy, all founded on the operation of Dieffenbach, who, in 1839, did the first operation of this kind. Objection may properly be made to any method which involves the necessity of repetition and sometimes multiple repetition. None of the methods offer in advance any definite guarantee of complete success in one session. It is the writer's belief that the Panas operation offers the greatest guarantee of success in one intervention. A description of the operation is then given. It consists briefly of a very thorough stretching of the muscle with a strabismus hook before tenotomizing and the same process is repeated on the other eye. Panas' statistics, as well as those of Roosa and others, are given and, finally, the writer's own experience in 225 operations on 120 patients. Of 110 cases of convergent strabismus there were 98 immediate and permanent results as to parallelism by operation in one session. There were three overcorrections, 2 of which assumed parallelism without operation; the third case disappeared. There were 9 cases of undercorrection, 3 of which were cured by a simple advancement of the externus, 4 by a reopening of the wound within two weeks and the incision of some capsular remnants; 2 other cases still show some convergence. Of 10 cases with divergence, 9 showed immediate perfect results; the tenth was corrected by a tuck advancement. In one instance only was the muscle ruptured by the stretching. E. E. J.

Unilateral Nystagmus.—Frachtman, Heinrich (*Wiener Klinische Rundschau,* July 2, 1905). Cases of unilateral nystagmus are comparatively rare; until 1902 there were only fifty cases reported in literature. In 1901 Shapringer asserted that a pure case of unilateral nystagmus does not exist. Neustatter and Duane considered unilateral nystagmus a modified bilateral one, where an interruption existed on one side in the conducting tracts of the smaller centers (muscle nuclei).

Graefe and Doench admit only the one form of nystagmus verticalis as a form of unilateral nystagmus, Hoch has seen a case of rotatory unilateral nystagmus, which, after the vision improved, passed into the vertical form and later disappeared entirely.

The author describes in detail the history of his case of unilateral nystagmus horizontalis, and then goes on to give the various theories as regards the causation of nystagmus.

Crzellizer does not consider nystagmus a disease, but a symptom, and accordingly does not believe it possible to give a uniform cause for the condition. The affection may be produced by disease of (1) an eye muscle, (2) a peripheral nerve, (3) motor center, (4) amblyopia.

Heinman distinguishes the following forms of unilateral nystagmus from an etiologic point of view:

1. Nystagmus in highly amblyopic and strabotically deviated eyes.

2. Nystagmus as an accompanying symptom of nervous and cerebral affection.

3. Transitory nystagmus in spasmus nutans in children.

The cases belonging to group one are the rarest.

A. Graefe considers unilateral nystagmus due to the fact that a weak visual impression in the amblyopic eye causes a weaker sensory irritation on the cerebral optic center, by which again a subnormal irritation is set up in the optomotoric center, and this condition is called nystagmus.

Landolt states that if nystagmus is associated with impaired vision, and this vision can be improved, the nystagmus can be improved or entirely cured.

Rocheman has seen a case of nystagmus associated with pannus keratitis, in which after the cure of the pannus keratitis the nystagmus disappeared.

A. Graefe thinks that if nystagmus is associated with a refractory error, and this error is corrected, the nystagmus may also be improved. J. G.

UNILATERAL TRANSITORY PARALYSIS OF THE ABDUCENS.—WIENER, MEYER, St. Louis (*Jour. A. M. A.*, Aug. 26, 1905), reports four cases, all in females of from 9 to 28 years of age, transitory in character, and not associated with paralysis of other ocular nerves or with any tangible disease of any sort. The underlying cause was hysteria, as shown by the rapid cure by suggestion and bromids. There was no other symptom of ocular hysteria and no evidence of injury, syphilis, congenital or other, rheumatism, diabetes, cerebral disease, which are the usual etiologic factors in abducens paralysis. P. H. F.

INSUFFICIENCY OF CONVERGENCE.—LANDOLT, Paris (*Archives d'Ophtalmologie*, July, 1905). Insufficiency of convergence, according to Landolt, is more frequently the cause of asthenopia than is generally thought. In its higher grades it can not be satisfactorily corrected by prisms.

When the point fixed is at a finite distance from the individual the convergence is positive. When the distance is infinite the convergence is zero. But as we can fix binocularly with the visual lines divergent, as in looking at a distant object through abducting prisms, when the lines converge behind the head, this fixation is spoken of as negative convergence. The amplitude of convergence is equal to the difference between the maximum and the minimum.

and to obtain it the negative must be added to the positive. Convergence in binocular fixation increases as the object approaches the eyes and the angle of convergence is, therefore, in inverse proportion to the distance. The distance of the object is measured in meters, and the angle of convergence of each eye necessary to fix binocularly a point situated at one meter on the median line is called the meter angle. If, therefore, the distance of the point of fixation is one meter, the convergence is equal to one meter angle. If the point approaches to one-ninth of a meter, the convergence equals nine meter angles, which is about the normal minimum. The normal negative convergence is about one meter angle, which makes the amplitude about ten meter angles.

Experience has shown that for constant near work only about a third of the positive convergence should be demanded, the other two-thirds being held in reserve to sustain the continuous effort.

To illustrate the subject of insufficiency of convergence, the following case is reported: September 4 a healthy girl of 13 years came to the clinic complaining of a severe asthenopia which prevented her from doing any fine work. Vision and accommodation were normal. The positive convergence was only 2.5 m. a., while the minimum convergence, instead of being minus, was + 1.75 m.a. That is, she had an insufficiency of convergence, but a convergent strabismus. A crossed diplopia within 40 cm. and a homonymous diplopia beyond 50 cm. This anomalous condition was explained by the fact that a "confrère imbued with the fatal error or supposing that weakening the external straight muscle increases the power of the internal" had tenotomized the external of the right eye and the external excursion of that eye was only 40°, while the external excursion of the left eye was 58°. The nasal excursion of the right eye was 44°, while that of the left eye was 42°. So that an increase of the nasal excursion of 2° was obtained by the sacrifice of 18° of the temporal excursion. The tenotomy of the right external had changed the facultative divergence of the patient to convergent strabismus with homonymous diplopia, but left a persistent insufficiency of convergence. December 14 a simple advancement of the left internal was performed, and on the 19th the stitches were removed and the eyes were left uncovered. On February 17 the minimum convergence was —.50 m.a. and the positive was 10 m.a. On the 22nd of March the amplitude of convergence was 13.75 mm., or above the normal minimum. The advancement of the internal rectus, while powerfully augmenting the convergence, had not increased the convergent strabismus. On the contrary, the strabismus gradually disappeared and gave place to a decided facultative divergence.

By the setting back of a straight muscle the eye is displaced in its muscular funnel and runs the risk of losing in excursion not only to the side of the cut muscle, but even to the opposite side. By advancement, on the contrary, we lodge the eye more deeply in its funnel and give the muscles more influence on the rotation of the globe, and it is not strange if the excursion of an eye is extended not only on the side of the advanced muscle, but even on the side of its antagonist. The author was surprised only that it had not been necessary to readvance the set back muscle. G. C. H.

MYOPIA.

CONTRIBUTION TO THE ANATOMY OF MYOPIC EYES.—STILLING, J., PROF., Strassburg (*Zeitschrift fuer Augenh.*, xiv, p. 23), found in 3 eyes, of which one was myopic (4 D.), the second hypermetropic, and the third emmetropic, almost the same measures, viz., the length, 24.5 mm., the vertical and transverse diameters nearly equal. The thickness of the sclerotic corresponded with that found in a large number of normal eyes of different refractions, viz., was least at the equator, increasing toward the optic nerve. Hardening fluids do not alter these conditions. Myopic eyes are, therefore, nothing but large normal eyes which, under muscular pressure, have grown chiefly in length. The hypermetropic of the 3 eyes had the largest vertical diameter. It depends upon the curvature of the cornea if such an eye remains hypermetropic or becomes myopic. Stilling found the corneal curvatures in a great number of eyes between 7 and 9 mm., the difference of 2 mm. corresponding to 12 dioptrics. As Stilling's tables show, a hypermetropic eye may be equal to, or even larger than, a myopic eye of considerable degree, and of 2 myopic eyes that of higher degree may have the shorter axis. This can only be due to the difference in the curvature of the cornea.

Another table shows the dimensions of normal eyes of adults. One-third were accurately globular, with diameters from 20 to 24 mm.; in one-third the longitudinal diameter exceeded the 2 others or was equal to the transverse diameters; in one-third the transverse diameter was greatest. On the whole, the longitudinal diameter varied from 20 to 25 mm., the transverse diameter from 20 to 26 mm., the vertical from 20 to 24 mm. C. Z.

ELASTIC FIBERS IN THE SCLERA OF MYOPIC EYES.—ELSCHNIG, A., PROF. (*Wiener Klinische Wochenschrift*, July 23, 1905). Lange, examining four myopic eye bulbs, found their sclera to possess comparatively few elastic fibers; he, therefore, concludes the myopia, and especially the ecstasy of the sclera in this condition, to be due to a congenital deficiency of elastic fibers in the sclera. The author, however, contradicts this statement, because, upon examining myopic bulbi, he finds that their sclera as regards elastic fibers are identical with sclera of emmetropic eyes. In the region of a staphyloma the sclera of a myopic eye is considerably thinner than it would be corresponding merely to an elongation of the axis of the eye. J. G.

Etiology-Prophylaxis of Myopia.—Hirsch, L. (*Medizinische Blatter,* June 8, 1905.) Cohn proved that the use of the eye for near work is the main cause of acquired myopia. The belief that myopia is acquired only in youth is erroneous. Among 640 typesetters, 240 were found to be myopic; of these 72 noticed their trouble after the twentieth and some only after the thirtieth year.

An individual using his eyes for near work causes an increased flow of arterial blood into the eye bulb, especially into the chorioid. The muscular pressure upon the bulb during nearby work prevents the easy outflow of the increased blood supply from the eye bulb and produces stasis. The stasis causes a transudation from the chorioid; this causes an increase in the volume of the vitreous humor. He recommends for treatment full correction and as little nearby work as possible. J. G.

Progressive Axial Myopia. Its Prevention and Cure by Appropriate Treatment of the Internal and External Recti Muscles, with Report of Cases.—Crocker, F. S., Chicago (*Jour. A. M. A.,* Aug. 26, 1905), describes his treatment of this increasing malady in detail, giving not only prism exercises at home to develop convergence, but also local interrupted galvanic treatments. He supplements these by operative measures, consisting of tenotomy of the external rectus of one or both eyes and pays strict attention to the general health and other factors which influence these cases. He concludes that the most important etiologic factor in a very large number of cases of progressive myopia is an insufficient power of convergence. Thus it is possible, he claims, to check the progress of myopia and to effect a cure. M. D. S.

The Total Correction of Myopia.—Angieras, Laval (*L'Ophtalmologie Provinciale,* August, 1905). Angieras says that the report on this subject, made by Bourgeois, at the last session of the French Congress of Ophthalmology, and the interesting discussion which it elicited, left more doubt relatively to the etiology of myopia than any positive results in the minds of those who were present. He says that whatever may be the respective parts played by the accommodation in producing an increase of myopia it is certain that the prolonged application of the eyes to vision at too close a range is one of the most constant and one of the most important factors. Among the many different phases of the health or the vigor of the eye which may influence the vision of a myope, aside from the mere degree of the condition, the author asserts that the state of binocular vision has no small place, and he recommends an examination of it by means of the stereoscope in order to obtain some idea as to how any correction of the condition will be tolerated. He mentions that Bruno-Bourdeaux had, in this connection, insisted upon the utility, before proceeding to prescribe a total correction, of seeking for anomalies of binocular vision by the aid of the diploscope. He thinks that it is not clinically possible to adopt a single general rule based exclusively upon the mensuration of the static refraction for the correction of myopia. He believes that the true principle is, in practice, to always determine, for each individual, that correction, be it total or partial, which will be the best adapted to his particular case. In support of these assertions, he quotes the happy epigrammatic conclusion of Bourgeois' paper, viz.: "Il n'y a pas de la myopia, il n'y a que des myopes." There is no myopia, there are only myopes. C. H. B.

TOTAL CORRECTION OF MYOPIA.—GENDRON, Lorient (*L'Ophtalmologie Provinciale*, June, 1905). Gendron, in commenting upon the recent report of Dr. Bourgeois to the French Congress of Ophthalmology on this subject, thought that his distinguished colleague was somewhat carried away by his convictions, and that he failed sufficiently to place in relief the advantages, or, at least, the inconveniences, of total correction in all cases of myopia, as also to discuss the arguments presented by those who refused to adopt his methods. The most important question to be settled, the author affirmed, was whether or not total correction of the condition really arrested the progression of the process. Such, he believes, has not been demonstrated. Bourgeois allows two kinds of progressive myopia—that of work, as, for example, of students, and that of malignancy. He thinks that there is no doubt but that the first kind is arrested by total correction. Gendron does not agree with him that the correction of a degree less than one diopter or even up to one and a half diopters should be worn for near vision, holding that ocular hygiene has vastly more to do with prevention of increase of the condition than total correction has. The same is true, he says, with respect to malignant myopia, the progress of which, he thinks, depends as much upon efforts at convergence as upon any intrinsic cause in the eye itself. He sees no necessity for imposing upon all patients a correction that so inconveniences them, especially in the low and medium grades.

He finds not more than one in four, or one in five, who will support the total correction without asthenopia. The partisans of total correction, he affirms, ignore two important points: 1. That the association between convergence and accommodation is not so close in the myope as it is in the emmetrope. (In the myope the convergence always gets the better of the accommodation). 2. That the ciliary muscle is often relatively weaker in the myope than it is in the emmetrope—not from atrophy, but from a congenital tendency. (Young myopes habitually overaccommodate.) Therefore, while he does not prescribe glasses for close work in these cases, he insists strongly upon the necessity of keeping the book, or other near object, at the greatest possible distance from the eye. Full correction, or nearly so, he regards as chiefly useful in diminishing the efforts at convergence, by removing the near point, i. e., in forcing the patient to work with the object at least 33 centimeters' distance from the eye. In the lower grades, this is readily accomplished without glasses; hence, to impose concave lenses is an inconvenience without profit to the wearer. In the high degrees, the total correction is rarely accepted for near work, and is not without positive danger. If the accommodation has not the deleterious action in these cases which has been formerly ascribed to it, one does wrong to completely eliminate its influence; at least, as regards near work. C. H. B.

LATE RESULTS OF MYOPIA OPERATION.—HUBER, FRITZ (*Beitraege zur Augenh.*, 1905, Heft 64, p. 175), reports, under the guidance of Dr. Sidler-Huguenin, on 100 eyes (90 cases), operated on by Prof. O. Haab, Zurich, who so far had performed 156 myopia operations. The essential points of the clinical histories are arranged in tabular form. The majority of the patients was between 11 and 30 years old, and the greatest number had, with very strong glasses, V. 0.1 to 0.5. The operation consisted in discission of the lens with 1 or 2 needles, evacuation of the lens matter by one or more punctures, and in most cases finally discission. Generally 1 to 2 discissions and 1 to 2 punctures were necessary. Before the operation 47 eyes had V. from 0.25 to 1.0, 53 eyes 0.01 to 0.25; after the operation 91 eyes had V. from 0.25 to 1.0, nine 0.01 to 0.25, a remarkable improvement. Emmetropia was obtained in 17 eyes, hypermetropia in 71, myopia in 12. V. was diminished after the operation in 7 eyes, raised in 85, remained the same in 8. Fifty-five out of 85 eyes, or 65 per cent., showed an improvement from 1.5 to 3 times.

Seventy-five eyes were examined later. In 11, or 14.67 per cent., new changes of the macula, in 16 per cent. opacities of the vitreous, in 12 per cent. retinal hemorrhages, in 5, or 6.67 per cent., detachment of the retina had occurred (in none of the eyes which were not operated upon). In 3 cases the detachment was spontaneous, in one of which the eye had not received proper care by the patient, in 2 it was traumatic. The spontaneous detachment set in 4 $^1/_{12}$, 1 $^1/_{12}$, 1 $^1/_3$ years, the traumatic 5 $^1/_3$ and 1 $^1/_{12}$ years after the first discission. Atrophy of the optic nerve was observed in 2 eyes, glaucoma in 1, septic infection in 1. Special attention was paid to the fact whether the patients had strained their eyes or not, with the following results: Six of the patients with macular affections had strained their eyes very much in their occupations, 5 not, 8 of the 9 with opacities of the vitreous and 8 of the 9 with retinal hemorrhages took proper care of their eyes, in 2 it was traumatic.

V. at the last examination compared with that shortly after the operation had remained the same in 29 eyes, improved in 16, impaired in 30. If the primary V. after operation is called 1, it was improved from 1 to 1.49 in 5 eyes, 1.5 to 1.09 in 7, 2.0 to 2.99 in 3, 3.0 to 3.99 in 1. V. before the operation compared with V. found later remained the same in 2, was improved in 57, impaired in 16. The majority of cases showed an improvement from 1½ to 3 times, some cases from 5 to 8 times. Out of 75 eyes V. was deteriorated in 10 (not counting 6 eyes which had grown blind), from new macular affections in 2, macular affections existing before the operation in 2, hemorrhages at the macula in 3, peripheral detachment of retina in 1, persistent posterior capsule in 1, unknown cause in 1.

Twenty-three eyes became emmetropic, 12 myopic, 34 hypermetropic. In the course of years the number of eyes with emmetropia almost doubled, that of the hypermetropic decreased, that of the myopic increased slightly. With regard to the deterioration of sight, it must be drawn into consideration that usually the more myopic eye and that with less vision was selected for operation.

Huber's statistics show that the phakolysis can not be recommended with absolute safety as a palliative against the progression of myopia and its deleterious sequelæ. The patient's attention ought to be called to the risk he has to submit to and to the necessity of taking as much care of his eyes after as before the operation to prevent complications as much as possible. Such eyes do not become more resistant and can not do more work after operation. They always have the same vulnerability as the myopic eyes.

C. Z.

NERVOUS SYSTEM AND VISUAL ORGANS.

Two Cases of Spasmus Nutans.—Buchanan, Mary, Philadelphia (*Annals of Ophthalmology,* July, 1905). Spasmus nutans is a disease of infancy, occurring generally between the 4th and 12th months. It is characterized by nodding, lateral or rotary movements of the head, either singly or in combination, accompanied by nystagmus. The head movements are monotonously regular, smooth and easy, while the nystagmus is very rapid. The latter may or may not coincide with the head movements. One eye only may be affected at a time, or the variety may differ in the two eyes. The subjects are generally rachitic or convalescent from illness. In about 28 per cent. falls preceded the onset. Deficient daylight is held to be a cause. The author holds that, while these causes are no doubt active, they are only contributary and that the immediate cause is to be found in the endeavor of the infant to acquire binocular single vision. She maintains that reported cases show a lack of study in this direction, and that the refractive state of the eyes has not been given sufficient investigation. In both the cases she reports a myopia of 4 D. existed, in one case with astigmatism. She advocates correcting existing errors of refraction, as well as a tonic and hygienic treatment, and holds that the prognosis is invariably favorable. M. B.

The Significance of the Eye-Symptoms in Disseminated Sclerosis of the Brain and Spinal Cord.—Uhthoff, W., Breslau (*The Ophthalmoscope,* September, 1905). "For the diagnosis of disseminated sclerosis are, among eye-symptoms, the change in the nervous optic conducting apparatus, above all in the optic nerve, the most important. Thus the ophthalmoscopic appearances are in nearly half the cases pathologic, and consist in simple atrophic alterations in the color of the papilla." He divides the appearance of the papilla into three groups: 1. Atrophic discoloration of the whole papilla, which appears in 3 per cent. to 4 per cent. of all cases. 2. An incomplete atrophic pallor of the whole papilla, so that the inner parts of the papilla still retain a slight reddish tint. 3. A partial limited atrophic discoloration of the temporal part of the papilla. These last two groups always constitute about 20 per cent. of all cases. In 5 per cent. of all cases optic neuritis is to be noted. In 5 per cent. of all cases visual disturbances occur without visible opthalmoscopic changes. The visual disturbances resemble closely those we observe in retrobulbar neuritis. The conditions of the field of vision may be grouped as follows: 1. Bilateral central scotomata, with free peripheral fields of vision, which are more often relative than absolute. Their demonstration may be very difficult. 2. In rare cases central scotomata with contraction of the fields. 3. Peripheral irregular contractions of the field. 4. In isolated cases regular concentric functional contractions. 5. A ring-scotoma seems to occur and then clear up only to give way to a persistent peripheral contraction. The onset of visual disturbances may be sudden or come on gradually. Permanent bilateral complete blindness is extremely rare. Transitory, complete or almost complete monocular blindness occurs more frequently. The disturbance of color-vision is relatively often quite insignificant. Anatomically the optic nerve changes in disseminated sclerosis appear analogous in part with those of progressive tabitic atrophy, and are to be recorded as simple atrophy (disappearance of the medullary sheaths, destruction of the nerve fibers, absence of pronounced inflammatory interstitial changes, and so on). Changes of an interstitial inflammatory character may precede the stage of simple atrophy. Eye-muscle paralyses of a pronounced character occur in about 20 per cent. of the cases of disseminated sclerosis. Nystagmus and nystagmus-like twitchings occur. These paralyses are caused by central rather than nerve trunk changes. The abducens is most frequently affected, the third nerve more rarely, and only partially. The behavior of the pupil offers, on the whole, few pathologic or diagnostic important phenomena. M. B.

THE EARLY SYMPTOMS OF INSULAR SCLEROSIS.—HOBHOUSE, EDMUND (*The Ophthalmoscope*, September, 1905). Symptoms which are usually regarded as hysterical are, in not a few cases, the first indications of anything wrong. Among the positive symptoms, which are frequently found early, are well-marked nystagmus, scanning speech, intention tremor, pallor of discs, incontinence of urine and extension reflex on plantar stimulation. Any temporary failure of vision in persons between 20 and 40 should be looked upon with suspicion, and the state of the discs and ocular movements carefully noted. The knee-jerks are usually exaggerated. Ankle-clonus is frequently present early, and extensor plantar reflex may appear at any time. M. B.

AFFECTIONS OF THE EYE IN CEREBROSPINAL MENINGITIS.—HEINE (*Wiener Klinische Rundschau*, Aug. 6, 1905, and *Berliner Klinische Wochenschrift*, Nov. 25). Epidemic cerebrospinal meningitis may affect the motor nerves of the eye, as well as the retina, optic nerve and optic tract, occipital cortex and the uvea.

The most frequent affections are paralysis of the eye muscle nerves, which are mostly of basilar origin; even complete paralysis of all eye muscles may exist. The lighter forms of paralysis of the eye muscles often recover completely. From a diagnostic point of view the rarity of nictation at the onset is of some importance.

Extensive hemorrhages in the retina may also occur at times. More often, however, are affections of the optic nerve in the form of a simple neuritis optica intra-ocularis, mostly without a choked disc, or in the form of an inflammation of both nerve trunks, which are of basilar origin and show the picture of basilar amaurosis leading at times to a descending atrophy of the optic nerve. Cortical disturbances of vision are more rare. J. G.

CONGENITAL "WORD-BLINDNESS" AND ITS TREATMENT.—THOMAS, C. J., London (*The Ophthalmoscope*, August, 1905). Teachers of schools under the London County Council are instructed to submit to the medical officer every child at the age of 7 who appears very backward or defective; in this way a great number of cases of word-blindness have been brought to light. The author estimates that 1 in 2,000 of all London elementary school children may be expected to show word-blindness to a considerable degree. Its frequency is greater among the lower classes. It frequently assumes a family type. It occurs more frequently in boys than in girls. The condition is associated with an extremely good memory for things other than words. One case of word-deafness and seven cases of word-blindness are reported. The prognosis is that in less serious or partial cases where the child is otherwise intelligent other centers may be brought in to help, and finally the child may pass muster, not being a fluent reader or writer, but able to get along. In the more serious cases, if of good intelligence, much may be done by developing other memory centers; but, if of dull intelligence, no progress will be made with reading, and the time that would be expended in that direction would better be expended in manual training. In the treatment the child should be placed in a special class and under a special teacher. The phonic method of Miss Dale is the method to be adopted. In this the children associate from the beginning the form of each letter, with the mechanism of producing the most usual sound for which it stands; thus each word is pronounced without calling upon the visual word center at all. When irregular words are introduced and ideographs become necessary, other memories must be invoked, such as spelling the letters with the lips, tracing the letters in the air or on a book with the fingers or writing the words themselves. When a particular memory is found, it is to be encouraged to the utmost. M. B.

A CASE OF ACUTE ANTERIOR POLIOMYELITIS WITH OCULO-PUPILLARY SYMPTOMS.—CLOPATT, ARTHUR, Helsingfors (*Deutsche Med. Woch.*, 1905, No. 38, p. 1495). Although literature contains abundant casuistics of acute poliomyelitis, very little is mentioned about oculo-pupillary symptoms. In Clopatt's case, a girl, aged 2 1/3 years, suddenly fell sick with chills and fever which, on the fifth day, resulted in paralysis of the left arm, ptosis and miosis of left eye. The left pupil contracted more than the right upon light. After 3 weeks a gradual improvement commenced. H. assumes a lesion of the ciliospinal center of the sympathetic nerve in the lowest part of the cervical and the uppermost part of the dorsal medulla. C. Z.

OPERATIONS.

A New Operative Procedure for Correction of Atonic Senile Ectropion.—Blanco, T., Valencia (*Archivos de Oftalmologia,* September, 1905). The author describes the following operation from which he has had good results, claiming it to be simpler and equally efficacious as the de Wecker. After the usual preliminaries, the conjunctiva is pierced with a threaded semi-curved needle one millimeter from the palpebral margin at the place where the ectropion is the most pronounced. The needle is passed between the conjunctiva and tarsus to the bottom of the inferior conjunctival sac where it is extracted, then reinserted at the point of exit and passed directly through the lid and when the point can be felt beneath the skin it is directed downward, subcutaneously, reappearing in the cheek a centimeter or more below the palpebral border. The other end of the thread is now armed with a needle which is also inserted into the conjunctiva one millimeter from the palpebral margin and four or five mm. to the right or left of the first insertion and made to follow a course parallel to that of the first. The two ends are tied over a drainage tube and drawn sufficiently tight to produce an over-correction or entropion. Sometimes it is necessary to use a second suture, but never more than two. By daily inspection, loosening the ligature and control of the amount of correction, the desired result is obtained. H. M. F.

Operation for Cicatricial Entropion Complicated by Trichiasis.—Hochheim, Berlin (*Arch. f. Augenheilk.,* B. lii. H. I and II). With a view of overcoming the objections raised against the various operations for the relief of this condition, Hochheim first makes an intermarginal incision 2 mm. deep extending the entire length of the lid from the punctum out. No care is taken to spare the Meibomian glands, which may be curetted to prevent secretion. The skin incision is made fairly close to the lid margin. After excision of the skin and muscle flap, the needle is entered first through the upper wound margin, then plunged deep into the tarsus up to the lower wound margin, where it is brought out through the skin. Five such sutures are used. If in tying these sutures the tarsus is pressed downward by a probe midway between the point of entrance and emergence of sutures the effect of the Snellen grooved incision is obtained, i. e., the inferior margin is ectropionized. The intermarginal incision is made to gape, allowing the implantation of a graft. W. Z.

A RADICAL OPERATION FOR TRICHIASIS AND ENTROPION OF BOTH LIDS.—CHRONIS, P. F. (From the eye clinic of Professor Oeller in the University of Erlangen, *Klin. Mon. f. Aug.*, 1905, xliii, ii, p. 6). After canthoplasty an incision through the skin is made parallel to and 2 to 3 mm. distant from, the ciliary margin, from near the tear-point to the canthoplastic cut, and is dissected, in order to expose the whole palpebral muscle, which is excised. Then pieces of the thickened tarsus are sliced away with the knife. Five to 6 sutures, commencing at the medial canthus, are laid through the ciliary margin (without touching the hair bulbs) to the tarso-orbital fascia in such a manner that they lie on it horizontally. The first canthoplasty suture runs from the upper lateral, the second from the lower lateral angle from inward outward to the apex of the triangle, formed by canthoplasty, and the third fastens the conjunctiva in the apex. After the sutures are tied they are pulled upward and an intermarginal incision, 1 mm. deep, is made behind the cilia at the level of the gray line which separates the glandulæ from the openings of the ducts of the Meibomian glands. The wound of the skin heals by second intention. The first dressing stays for 2 or 3 days. Recovery takes place in a week. The intermarginal incision paralyzes the action of the cicatrized conjunctiva, and its scar forms the free lid border which has been abolished by the cicatricial conjunctiva. Chronis claims that his method, which is illustrated by drawings, has yielded permanent results in hundreds of cases. C. Z.

EVOLUTION OF BLEPHAROPLASTY.—BENSON, A. H., Dublin (*Brit. Med. Jour.*, Aug. 26, 1905). The writer points out that entropion and trichiasis are among the common eye troubles and among the most damaging, that numerous operations have been advocated and practiced, but that very few of these are satisfactory and many are objectionable and injurious.

He gives the history of the evolution of operations for the cure of this anomaly from the time when amputation of the entire lid margin was practiced; he reviews the operations of excising the ingrowing cilia, of straightening the tarsus, of transplantation of the offending cilia with loss of skin, and, finally, of this last procedure without loss of skin.

The last method was superior to all the former operations, but was not ideal because the skin transplanted to the lid border was, after all, skin and not mucous membrane; it was covered with fine hair and, hence, could not be a perfect substitute for conjunctiva.

He describes the operation performed at St. Mark's during the past 21 years as the simplest and most satisfactory of all the varied modifications of blepharoplasty; he considers it surprising that so few seem to know anything practically about it; this may be due to the fact that descriptions of this operation have been so confusing on account of faulty directions and unnecessary complications that many are deterred from trying the method, and those few who have used it find their results unsatisfactory owing to faulty directions.

The operation is performed as follows: The patient is anesthetized, a clamp applied to the lid, an incision made along the whole length of the free border so that all the cilia are in the anterior or skin flap and none in the posterior or conjunctival flap; this incision is at least one-quarter of an inch in depth and made rather obliquely forward, so as to allow the wound to gape freely. A second flap is applied to the patient's lip and two parallel incisions are made through the mucous membrane; the length of these incisions is rather shorter than that in the lid; the ends are connected by short converging extensions so that the flap is pointed; the flap is then dissected up, placed on the finger of the left hand and all submucous fat and connective tissue cut off. A silk suture attached to a fine curved needle is then passed through one end of the flap and it is sutured into one end of the gaping incision made in the lid; the other end is similarly sutured, and each edge is fixed by two or more sutures to the corresponding edges of the lid incision. The clamp is then removed. Profuse bleeding follows for a few minutes, but soon stops. Contrary to expectation, this bleeding does no injury to the flap if properly sutured, and does not interfere with its vitality in any way. The lip wound is closed with a running suture. A dressing of boric ointment is applied to the eyelid and a bandage applied; this is changed the next day. The sutures may be removed in four or five days.

It is a mistake to make the flap of mucous membrane longer than the skin incision, since it does not contract; if anything, it should be cut slightly shorter than the intermarginal incision, since slight stretching does no harm, but rather aids its proper adaptation. It is unnecessary to wait for bleeding to cease before applying the flap; the flap is fixed in position while the lid clamp is still on, and if properly sutured the rush of hemorrhage which follows the removal of the clamp in no way injures the prospect of good union. The operation is equally suitable to the upper and the lower lid and to all varieties of trichiasis, with or without entropion.

The St. Mark's operation has now been performed many hundreds of times and with almost uniform success. The transplanted flap almost always lives in its entirety. If any of it fails to live it is usually due to faulty suturing, or to the incision having been too shallow. Even in those odd cases where sloughing of the flap does occur no harm results from the operation, but almost always some benefit, and nothing hinders a repetition of the transplantation if required when the lid wound has healed. The result of the operation once obtained is permanent, for the flap of mucous membrane does not gradually grow smaller (as transplanted skin does), but remains without perceptible change for years and years. C. H. M.

THE TECHNIC OF IMPLANTING THIERSCH EPIDERMIS GRAFTS IN THE OPERATION FOR SYMBLEPHARON.—HOTZ, F. C., Chicago (*Annals of Ophthalmology,* July, 1905). If we have to deal with a symblepharon of the lower lid, the lid and globe are separated and the cicatricial bands excised. A half-moon-shaped disc is cut from a plate of lead or tin which is ½ mm. in thickness. This half-moon-shaped disc is made just large enough to fit into the lid pocket. Its upper straight edge is perforated at intervals of ½ cm., and this edge conforms to the lid border. The ends of the plate are rounded. After being satisfied of the accurate fitting of the plate, the next step is the cutting of the epidermis flap from the outer surface of the patient's arm, the part having been previously prepared. The arm is extended from the shoulder, and while supported by an assistant the arm is grasped by the operator between the fingers and thumb of his left hand so as to keep the skin from which the flap is to be shaved evenly stretched. A flat razor is used, and its side, which is laid upon the skin, is lubricated with sterile vaselin. If this is done it is not difficult to cut a flap wide enough and long enough to cover the whole wound and to get it so thin that it contains merely epidermis and the tops of the papillæ. The cut flap is transported directly from the blade to the wound over which it is spread out, while an assistant holds the lid everted. The bulbar portion of the flap is then fastened by a few fine silk sutures to the wound edges of the ocular conjunctiva at the nasal and temporal side. Then the flap is tucked down into the angle between the eyeball and lid and finely spread out over the lid wound to the free margin. The convex edge of the lead plate is now placed upon the flap at the junction of the lid and eyeball and held there by moderate pressure while the assistant allows the everted lid to slowly return to its natural position. After being satisfied that the flap is smooth and not rolled in at any point, and while still holding the plate in place, insert a needle armed with thin black silk into the hole at the edge of the plate which is nearest the center and pass it through the lid, and let the assistant tie the thread. A similar suture is placed near the outer and inner canthus. This plate assures even pressure of the flap, as well as immobilizes the lid, thus rendering it unnecessary to sew the lid margins together. The eye should be kept bandaged for three days. The plate is taken out at the end of a week.

M. B.

A NEW OPERATION FOR MODERATE SHORT SIGHT. MADDOX, ERNEST E., Bournemouth. (*Brit. Med. Jour.*, Oct. 21, 1905.) The writer refers to his description of an example of amelioration of short-sight by pressure-massage of the eyeball in the *British Medical Journal* of Oct. 15, 1904, and then gives the sequel of this case. This he does more for its interest than as a precedent, since he regards the operation which is described as of too hazardous a nature to be justifiable except under exceptional circumstances. The history of the case is as follows:

A boy, aged 16, was disqualified for the medical examination preliminary to entrance to Woolwich, by a slight excess of myopia; the loss and disappointment were so great that an attempt was made to lessen the defect by the pressure massage treatment recommended by Domac, of Dijon, with the result of improving vision sufficiently to have enabled the boy to pass the army medical examination had the latter been held sooner. But in the interval between April and December, the improvement had disappeared and repetition of the pressure-massage was now insufficient to bring vision to the required standard; this was attributed to eight months' hard study, causing aggravation of the defect by further lengthening of the eyeball. On presenting himself for the army visual examination in January, 1905, one eye was passed with just 6/24, and the other rejected as 6/36.

After acquainting the patient with the risks and the knowledge that the operation had never been done before, Maddox proceeded to flatten the cornea first in one meridian and then at right angles, the idea being borrowed from an informal and then untried suggestion which he had made, during a brief communication to the Ophthalmological Society, for the correction of myopic astigmatism by conjunctival sutures. The operation was done in January under local anesthesia. The more difficult meridian, the horizontal, was commenced with, so that, should the experiment fail, the patient might be spared two operations.

"It is impossible with most eyes to make a large *lateral* corneal incision with a straight cataract knife. I, therefore, first dissected up a conjunctival flap, and threw it over the cornea, then introduced a triangular iridectomy knife between the reflected conjunctiva and the sclera, and entered the anterior chamber. This route I had never traversed before, and it made the operation an exceedingly delicate one, for the peripheral nature of the incision, in his unusually nervous and mobile eye, made the iris prolapse again and again, and especially after enlarging the incision above and below with a probe-pointed knife, which formed the next stage of the operation, for only a very large incision is capable of producing a regular flattening of the cornea. At last the iris was comfortably reposed, and the conjunctival sutures inserted so as to exert considerable traction on the flap. Healing was painless and uninterrupted. The second operation was done in April after another term of study, and was a much simpler matter than the first. The incision was made with an ordinary cataract knife, this time downward, and the healing was equally speedy. On August 23, after another term of study, he wrote: "I passed the medical successfully yesterday." C. H. M.

PTOSIS AND THE OPERATION OF MOTAIS.—BRUNS, HENRY DICKSON, New Orleans (*Annals of Ophthàlmology,* July, 1905). After reviewing the causes of ptosis and its treatment, the author describes Motais' operation for ptosis and reports five cases he has operated upon by that method. The operation consists in exposing the tendon of the superior rectus muscle from its scleral insertion well up into the fornix. With the tendon held up by a tenotomy hook, a suture is passed through the central fibers of the tendon and tied. The fibers included in the suture are severed from their scleral attachment and stripped up by two incisions carried backward through the muscle as far as possible. The sutures are then carried through a dissection of the skin from the tarsus and emerge through the skin close to the lid border. The tendon is now pulled close up under this point and the suture tied over a little roll of gauze. The ocular conjunctiva and the fornix conjunctiva are brought together with sutures and the eye closed. The conjunctival sutures are removed on the third day and the tendon suture on the fifth or seventh day. The effects at the time of the operation are exaggerated, but the ultimate result gives a much better cosmetic and visual result than any other operation. M. B.

Injection of Paraffin in Treatment of Extropion.—Moretti, E. (*Annali di Ottalmologia,* 1905, pages 391-395), makes a preliminary announcement in regard to the treatment of entropion by local injection of paraffin. He has been experimenting on rabbits, injecting paraffin with a melting point at 57° to 60° C., making the injection in the upper lid, in front of the tarsus, for the purpose of causing the lid to turn outward along its lower margin. A month after the operation the ectropion thus produced persisted to a marked extent. He then removed the lid to examine it histologically. His findings will be published in detail in his complete report. For the present he gives merely a brief summary of them, remarking that the conclusions recently published by Bolognesi in regard to injection of paraffin into the tissues of rabbits' eyes can not be accepted without reserve. C. A. W.

Action of Melted Paraffin in the Ocular Tissues.—Bolognesi, G. (*Annali di Ottalmologia,* 1905, pages 79-93), has made a study of the action and behavior of paraffin when injected into the tissues of the animal body. He relates his experiences with it injected into the tissues of the eye. He used paraffin with a melting point a little above the temperature of the body. This completes his research on the local and remote effects of paraffin injected into different organs and tissues. It has been used by others to form a support for the artificial eye after enucleation or exenteration of the eyeball, but he injected it directly into the cornea, the anterior chamber or into the cavity left after exenteration, all his tests being on rabbits. He found that it induces the formation of spaces, as in the cornea, where it separates the layers or distends previously-formed spaces, as in the anterior chamber and in the ball after exenteration. In both cases the paraffin behaves as an aseptic foreign body and becomes encapsulated with newly-formed connective tissue. Septa may ultimately develop within the connective tissue and subdivide the mass of paraffin into a number of smaller masses. These results harmonize with those the author has obtained in other tissues. There are no evidences of phagocytosis on the part of the organism toward the introduced paraffin, nor does it disappear or change its place, and there are no signs of any chemical action, near or remote. He was unable to detect any indications of embolism such as he has observed after injection of paraffin into other organs. In short, the anatomic-pathologic findings indicate that the paraffin exerts merely a local mechanical action on the tissues of the rabbits' eyes. C. A. W.

Improvement in Ocular Prothesis by the Transplantation of the Rabbit's Eye.—Lagrange, Bordeaux (*Archives d'Ophtal-*

mologie, July, 1905). Lagrange proposes to implant the eye of a rabbit in the capsule of Tenon after enucleation and proceeds as follows:

1. In enucleating the eye of the patient a thread is placed in each of the straight muscles to prevent their retraction and to have them in hand.

2. After enucleation there must be complete arrest of hemorrhage by means of iced cloths, prolonged tamponing, etc., before inserting the rabbit's eye.

3. An eye of small or medium size from a young animal is chosen.

4. The eye is introduced into the capsule of Tenon and the muscles are sutured in front of it in pairs with fine silk or catgut.

5. The conjunctiva is sutured above the muscles.

6. An occlusive dressing is applied and the sutures are allowed to remain in place for a week. In inserting the eye the cornea is placed backward—looking toward the optic nerve—as the sclerotic resists the pressure of the threads better. The author claims to have obtained a good permanent stump for prothesis in eight cases out of eleven. G. C. H.

SOME RECENT DEVELOPMENTS IN THE SURGICAL TREATMENT OF STRABISMUS.—STEPHENSON, SYDNEY, London (*The Lancet*, Sept. 23, 1905; see also *La Clinic Ophtalmologique*, Oct. 10, 1905.) The writer gives a brief résumé of the history of tenotomy for the relief of strabismus and of modifications and substitutes for this operation.

"Some few years ago, realizing the extremely uncertain effect of simple tenotomy, it occurred to me that a more strictly scientific proceeding would be to lengthen the tendon of the rectus muscle without at the same time interfering with its actual insertion into the sclerotic coat of the eyeball. In this way I hoped that the 'dosage,' so to speak, of tenotomy might be rendered more or less certain instead of being, as in the old operation, an almost unknown factor. My efforts were crowned with success. I described the method of operating and exhibited several patients upon whom the operation had been performed, at the Ophthalmological Society of the United Kingdom in 1902. Briefly, the steps of the operation were as follows: A vertical or curvilinear incision was made with scissors over the insertion of the internal rectus muscle and the latter was exposed as fully as might be and carefully separated from the overlying conjunctiva by a few snips of the scissors. After a small squint hook had been passed beneath the tendon a fine, well-boiled silk suture was inserted through the lower border of the tendon close to the sclera. The lengthening of the tendon without disturbing its insertion might be effected in several ways, of which the two most practical alone need be described. 1. A long oblique incision is made with scissors, commencing near the lower border of the scleral insertion and terminating at the upper border of the muscle, some distance from its tendinous attachment to the eyeball. The two ends of the tendon are then united by a couple of points of interrupted suture. 2. The lower half of the tendon is cut through some little distance from the scleral insertion and the incision is carried along the center of the tendon, midway between its upper and lower border, finally to be brought out at a right angle to its former course. The free ends left by this step-like incision are united by sutures. The lengthening of the tendon as carried out by either of the foregoing methods should be directly proportionate to the linear measurement of the squint; in other words, in a strabismus of five millimeters an attempt to lengthen the tendon by just that amount should be made. The final step, after the tendon sutures have been tied and cut off short, is to close the conjunctival incision neatly with several points of interrupted suture. The operation of tendon lengthening may or may not be combined with tenectomy and advancement of the antagonist muscle—the external rectus, of course, in the case of convergent squint. As a rough general rule for my own guidance, whenever I find the outward excursions of a squinting eye to be reduced or when there is a high degree of amblyopia in the misdirected eye I perform the combined operation. A squint of over 15 degrees angular measurement also furnishes another indication for the combined operation. As a matter of experience I find it more satisfactory to undertake these operations upon the ocular muscles under cocain (2 per cent.), or stovain (5 per cent.), or eucain lactate (2 per cent.) simply dropped into the conjunctival sac. The use of adrenalin hydrochlorid (1 in 1000 or 1 in 2000) is a material help, inasmuch as it renders the intervention in many instances an almost bloodless one. In my opinion, it should be employed, indeed, whether a general anesthetic is or is not given. It is worth noting that an agent has recently been placed at our disposal that acts even better in inducing local anesthesia and hemostasis than cocain and adrenalin applied separately to the eye. The new combination has received the name of 'eusemin' and consists of cocain and adrenalin and chloretone dissolved in physiologic salt solution. It is supplied in hermetically sealed tubes of amber glass, each containing three cubic centimeters. Eusemin has been used in ophthalmic surgery by Cohn. Applied to the eye before and during the performance of the operation which it is the purpose of this communication to describe, eusemin renders the work at once simpler and more speedy. One last point—namely, the instruments used, as scissors, hooks and fixation forceps—should be somewhat smaller than those generally employed in the usual operations for squint."

Grimsdale's modification of this operation is described. In December, 1904, Landolt described the operation reported by the writer in 1902 as "a new operation" for inveterate cases of convergent strabismus, concomitant and paralytic, in which marked contracture of the internal rectus was accompanied by changes in the structure of the muscle and by loss of its elasticity. The operation of muscle lengthening is by no means easy to do, and consequently he does not expect that it will replace the simple and often quite satisfactory tenotomy; he is convinced, however, that it is more exact and scientific and the results can be foreseen and graded with considerable accuracy.

The technical difficulties of tendon lengthening led the writer to find a simpler substitute and he made use of a device adopted by orthopedic surgeons—viz., the so-called "artificial tendon." This procedure is explained and as applied to the internal rectus muscle is described as follows:

"The tendon is exposed as in the former case and two sterilized silk threads are passed through the tendon about three millimeters from its scleral insertion—one through the upper and the other through the lower border of the muscle. The threads are then knotted, one long end armed with a small curved needle being left attached to each. The tendon, thus securely held, is next divided vertically on the outer side of the knot—that is to say, about midway between the latter and scleral insertion of the tendon. The threaded needles are then passed between the distal and the proximal portion of the divided tendon in such a way as to bridge over the gap left between the two. Lastly, the two sutures are tied together. An even simpler way of forming the artificial tendon is to use two needles on one length of silk. If advancement of the antagonist muscle has formed part of the operation, the sutures should not be adjusted until the first operation has been completed. If, on the contrary, muscular elongation is alone contemplated, then before the threads are tied the eyeball should be strongly abducted so as to leave a distinct interval before inserting the silk threads of the artificial tendon.

"My experience with the 'artificial tendon' is not as yet extensive, but satisfactory results have been obtained in the cases where it has been tried. One thing is clear—namely, that it is much easier to carry out that tendon lengthening, properly so-called, and on that score alone it is likely to commend itself to the minds of practical ophthalmic surgeons." C. H. M.

Lateral Displacement of Tendon Insertions for the Cure of Strabismus.—Jackson, Edward. Denver (*Jour. A. M. A.*, Aug. 19, 1905), points out that the recti muscles act on the eyeball from a common origin and that their normal directions prolonged backward would pass practically to a common point. Their differences of action depend on differences of insertion. By lateral displacement of its insertion one rectus might be made to take up the function of either of the others. Lateral displacement of the insertion of the recti tendons brings about a corresponding change of function. The function of each of the recti muscles varies with the direction in which the eyeball is turned. With the eye turned strongly inward, the superior and inferior recti come to the assistance of the internus and aid in convergence. With the eye turned strongly outward, they lose all tendency to turn the eye inward and may even aid divergence. He has accomplished lateral displacement of the tendon insertion by partial tenotomy and complete tenotomy, with suture of the tendon to the site of desired insertion.

In partial tenotomy the division of the tendon begins at one edge of the insertion and extends beyond the middle. Almost the whole breadth of the insertion must be divided. But sufficient tissue should be left to keep the uncut side of the tendon perfectly firm. He has practiced lateral displacement by a partial tenotomy on the superior and inferior recti muscles chiefly for the correction of excess of convergence, and describes his method of operating. He claims this operation is followed by no diplopia and by no more reaction than ordinary complete tenotomy.

Lateral displacement of the tendon insertions of the superior and inferior recti in connection with tenotomy of the internus is an effective and reliable operation for high degrees of convergent squint. He begins with a complete tenotomy of the internus and through the same conjunctival opening the scissors are introduced and the nasal one-half to three-fourths of the tendon of the superior or inferior rectus is divided at its insertion. He strips the edge of the tendon back one-half inch or more from the insertion by means of a strabismus hook. He cites a case where this operation was performed successfully for a high degree of squint and explains that no protrusion of the eyeball or other bad result has been observed. M. D. S.

On the Influence of Tattooing of the Cornea on the Visual Acuity.—Mageda, Dr., Nagoya, Japan (*Beitraege zur Augenheilkunde*, 1905, Heft 64, p. 232, with 3 plates), reports in tabular form on 30 cases out of his 58, in which he had splendid optical results with tattooing of semitransparent maculæ of the cornea with india ink. On 3 plates he demonstrates by his photographic method very instructively the impairment of vision by maculæ of the cornea and the improvement by tattooing them. With the Zeiss lens "unar" and iris diaphragm of 15 mm. diameter he photographed a diploma. If one-half or the center of the anterior surface of the lens was painted with paste, the photograph was indistinct; if blackened with india ink the distinctness of the pictures remained uninfluenced. After describing his mode of operating he concludes: 1. Under strict asepsis, tattooing is without danger. 2. If the pupil is free, better vision is obtained without iridectomy. 3. Tattooing improves not only the appearance of the patient, but also his vision. 4. The operation is a very valuable addition to therapeutics. C. Z.

Conical Cornea and Hot-Air Cautery.—Grossman, Karl, London, Liverpool (*Brit. Med. Jour.*, Aug. 26, 1905). The writer considers the use of the galvano- and the thermo-cautery for the cure of conical cornea not entirely satisfactory, since these methods completely destroy the tissue and it is impossible to regulate the temperature accurately. Sometimes it is not desirable to carry the cauterization to actual necrosis of the tissue to any great depths, but only to slightly singe the surface. Sometimes even no more than a drying up of the surface is desirable, and here the old forms of cautery are too severe in their action.

This end has been more satisfactorily attained by the application of superheated air, as employed in an instrument devised by Dr. Holländer, of Berlin. The instrument consists of a Pacquelin inside which a platinum coil is placed. The air in the coil is heated by the Pacquelin, and the rubber tubing is so arranged that the same set of bulbs which supplies the Pacquelin with the benzolin mixture sends an ordinary fresh-air current through the heated metal coil, thereby producing the hot-air current. The heated air as it comes out of the nozzle is rapidly cooled by contact with the atmosphere, and thus an easy means of regulating the temperature is arrived at by varying the distance of the nozzle from the part to be treated. The hot-air current can be started or arrested at any moment by the pressure of a finger on the supplying rubber tube.

The treatment was originally introduced for lupus, angiomata, etc., besides using it in conical cornea. The writer has employed it in infectious corneal ulceration and nævus of the lid.

For conical cornea the procedure is as follows: The cocainized cornea is placed so that the apex is accessible and the eye fixed; the hot-air stream is then directed upon the apex; the degree of cauterization can best be measured by previous experiments with bullock's eyes, etc. It is at first difficult to keep the point of the nozzle steadily directed upon the same spot while manipulating the air-supplying tube with the same hand; this embarrassment was remedied by the use of a mica shield with a perforation large enough for the hot air to pass through on to the apex of the cone; after some practice the shield is unnecessary.

The hot-air blast not only dries up the central part cauterized, which becomes white, but it dries up the epithelium of the surrounding parts of the cornea, which becomes grayish; the latter parts very soon resume their old transparency unless the cauterization should have been carried too far; this has not occurred with the writer, who has rather erred on the side of not cauterizing enough and repeated the operation two, three or four times until the desired effect was produced. With this precaution, the reaction under careful manipulation is very small.

The results in five cases are given: Case 1, V. increased from hand movements to 2/6 after three applications; Case 2, V. increased from hand movements to 3/6 after four applications; Case 3, V. increased from hand movements to 3/6 after four applications; Case 4, V. increased from 1/10 to 5/6 after two applications; Case 5, V. increased from fingers at 3 yards to 4/6 after four applications.
C. H. M.

A Simple Operation for Glaucoma.—Haberkamp, Bochum (*Die Ophth. Klinik*, No. 9, 1905), has successfully employed paracentesis of the anterior chamber with the actual cautery in a case of secondary glaucoma and in a case of absolute secondary glaucoma. The advantage claimed over paracentesis performed with a knife is that several days elapse before the hole is filled in, and during this time there is a chance for the secretory and circulatory conditions to be equalized. The advantages over iridectomy are that there are no extensive preparations for the operation, no detention and less expense.
W. Z.

Description of an Advancement Suture, with Collective Suggestions Regarding Operations on the Ocular Muscles.—Stevenson, Mark D., Akron, Ohio (*Jour. A. M. A.*, Sept. 9, 1905), thinks that an advancement, alone or combined with a tenotomy, is practically always to be preferred to a tenotomy alone. Since weak and not too strong muscles are usually to be dealt with, an operation that will strengthen a weak muscle is to be preferred. If the defect to be overcome is slight, an advancement alone may be all that is necessary, but very frequently he thinks it advisable to tenotomize, partially or completely, the opposing muscle of the same eye, the degree varying according to the needs. It may be accomplished with but slight or no change in the ultimate attachment of the tendon so that the rotating function of the tenotomized muscle will not be interfered with or, at most, but very slightly. However, it will be in a temporarily weakened condition and will not strongly oppose the advanced muscle, which will in the meantime soon become attached. If tenotomy is not performed, the results immediately after the operation may be correct and satisfactory, but before healing takes place some slipping of the suture is apt to occur, due to the constant tension of the strong opposing muscle, and the final result is sometimes more or less unsatisfactory. He describes an advancement operation in which a single suture with two needles is passed through the conjunctiva, capsule and tendon or muscle so as to form loops, grasping the fibers closely and at the same time not interfering with the circulation in the middle portion of the muscle. He states that good scleral anchorage can nearly always be obtained, as he passes his sutures deeply into the scleral tissue. The sutures are tied but once between two scleral anchorages which may be so situated as to properly affect torsion or the width of the muscle attachment. He also describes his after-treatment. Letters were sent out to a large number of ophthalmic surgeons and their opinions on questions relating to this subject are summarized by the writer. M. D. S.

A Novel Method of Treating Pulsating Exophthalmus.—Sattler, H., Leipzig (*Klin. Mon. f. Aug.*, 1905, xliii, ii, p. 1). A girl, aged 17, had, 10 years previously, sustained a heavy blow upon the left upper orbital margin. The left eye, deviating inward and downward, showed a prominence of 6.5 mm., no pulsation, but could readily be replaced. Above the eyeball was a soft, pulsating, easily compressible tumor, extending somewhat over the upper orbital margin, with a larger round medial and a smaller lateral elevation. Another soft, succiform, not pulsating, tumor reached from the medial angle obliquely toward the lower orbital margin. On all a loud, blowing murmur could be heard, and also a vibration could be felt on the sac on the nasal side. These symptoms disappeared and the tumors collapsed, on compression of the carotid artery. The patient complained of constant beating and whizzing in her head.

Undoubtedly there was a small perforation of the wall of the internal carotid, caused perhaps by a piece of bone at the end of the carotid canal within the cavernous sinus and an irreparable lesion of the sixth nerve. Since the aneurysmatic dilatations were situated on the medial side of the orbit, involving the frontal and angular veins, Kroenlein's operation seemed of no advantage.

After placing a loose ligature around the common carotid for controlling an eventual hemorrhage, the pulsating sac was exposed by an incision along the lower border of the eyebrow, tied with a double ligature as far back in the orbit as possible, as well as its continuations to the forehead and the distended angular vein, and resected. By means of an aneurysm needle the superior ophthalmic vein was ligated farther back. The wound was closed by sutures.

In the first few days the pulse was retarded, and the patient complained of intense headaches, which disappeared on the seventeenth day. Two months later an advancement of the external rectus was made.

The wall of the excised piece was thickened to four times its normal size and showed abundant new formation of elastic fibers, especially in the inner layers. The thrombosis of the cavernous sinus, which is necessary for a permanent cure and which in this case apparently caused the headaches at the occiput, involves, under aseptic course, no serious dangers. C. Z.

OSTEOPLASTIC RESECTION OF THE TEMPORAL ORBITAL WALL. CZERMAK, W. (*Deutsche Med. Woch.*, 1905, Nos. 39 and 40), describes his modification of Kroenlein's operation. The advantages are: The linear distance of the inner margins of the sections through the bones is larger, the resected bone can be displaced farther backward and downward, which allows of a greater displacement of the soft parts, it gives a larger range of excursions of the instruments, a better accessibility and a better protection of the soft parts. Czermak does not wish to discard Kroenlein's operation in favor of his, but in certain cases his is preferable, viz., in small tumors at the apex of the orbit, in tumors below the eyeball and reaching far in front, or, if located on the medial side of the globe so that, for better access, this has to be crowded outward. For a better understanding of Czermak's modification we refer to the original, especially as the detailed reports of 3 cases operated on by Czermak according to his method are very interesting and instructive. C. Z.

OPTIC NERVE.

Pigmentation of the Optic Nerve.—Ogawa, Okayama (*Arch. f. Augenheilk.*, lii-lv), has studied the subject under the following heads:

1. The normal pigmentation of the optic nerve considered anatomically (a) in eyes of lower animals, (b) in human eyes. 2. Ophthalmoscopically observed non-pathologic pigmentation observed in human eyes (as in his own reported cases). 3. Ophthalmoscopically observed pathologic pigmentation of the optic nerve. 4. Anatomically observed cases of pathologic pigmentation (as in his own reported cases). He forms the following conclusions: 1. Pigmentation of the papilla and optic nerve trunk is of frequent occurrence. It is most intense in the lamina cribrosa. In these instances the disc may be entirely black. The degree of pigmentation is often independent of the pigmentation of the skin of the animal. 2. In man pigmentation of individual connective tissue cells is sometimes present histologically. 3. Not seldom coarse pigmentation of the optic nerve head is observed ophthalmoscopically in normal human eyes. Rarely these masses are large enough to cover a large part of the disc. It is of congenital origin and consists of scattered chorioidal pigment. 4. Pathologic pigmentation of the optic nerve also occurs, the result of hemorrhages. The pigment is blood pigment (hemosiderin). W. Z.

A Forensically Interesting Case of Hereditary Neuritis Optica (Leber).—Hanke, Victor, first assistant at the eye clinic of Prof. E. Fuchs, Wien (*Klin. Mon. fuer Aug.*, 1905, xliii, i, p. 713). Two brothers, almost at the same age, viz., the beginning of the third decade of life, became afflicted with an acute bilateral retrobulbar optic neuritis, which, initiated by the same symptoms—scintillating headache, vertigo, transient amaurosis—led to rapid diminution of vision and, after a short stationary interval, gradually reached its acme. In both cases there was from the start a large central scotoma, with at first normal ophthalmoscopic condition of fundus, which passed into pallor of the temporal portion and terminated in typical neuritic atrophy of the optic disc. They presented the typical picture of optic neuritis from heredity and congenital predisposition, which almost exclusively affects the male members of a family, but may overlap several generations. These patients, however, could not recall a case of visual disturbance in their ascendence. The first patient, however, attributed his affection to the sudden changes of temperature to which he was exposed by working in a boiler at 30° C. and then going into the cold wintry air. Before the brother had applied for the same trouble Hanke, as expert before the court, declared the causal connection with the accident as more than probable and recommended an annuity on account of complete inability to work. Hanke now thinks of the possibility that the at first dormant hereditary disposition was evoked by the accident from its latency. The case is an interesting proof of the possible connection of hereditary diseases of the eye with accidents, discussed at the meeting of the "Verein Rheinischwestfälischer Augenaerzte" at Duesseldorf Feb. 5, 1905. (We refer the reader to our abstract (October number, 1905, p. 81) of the interesting paper of H. Guillery on traumatism as a cause of constitutional eye diseases, read at the same meeting, in which Guillery answers the question whether parenchymatous keratitis can be elicited by traumatism in an individual of hereditary tuberculous or syphilitic predisposition, in the affirmative.—Reviewer.)

C. Z.

Contribution to Diseases of the Optic Nerve from Vascular Atheromatosis.—Stoeling, B., Hanover (*Klin Mon. fuer Aug.*, 1905, xliii, ii, p. 113). Otto and Liebrecht found anatomically ascendent and descendent atrophies of the optic nerve in consequence of atheromatous processes. Bernheimer opposes these views. Bernheimer attributes to the frequent coursing of the ophthalmic artery toward the medial side of the optic nerve within the optic canal the development of tangential furrows which may entail atrophy of the optic nerve by pressure, and mentions a similar influence of the internal carotid and the circulus Willisii crossing the optic nerves and tracts. According to Liebrecht, however, this compression by the carotid and ophthalmic arteries takes place not in the osseous canal, but in the fibrous part behind it or against the clinoid ligament. He found that the arteriosclerosis of the vessels stopped at the osseous canal and that the central retinal artery was unaltered in all his cases.

Stoelting reports 4 cases. In one, which had given symptoms of brain tumor, no tumor was found, but extensive arteriosclerosis of the cerebral arteries, gray atrophy of both optic nerves and tracts and a focus of softening in the left caudate nucleus. Characteristic of atheromatosis was chronic optic neuritis, which in some very slowly passed into atrophy, in patients, who were syphilitic or had indulged in abuses spirituosorum, with tolerably long preserved central vision, late concentric contraction of the visual field, fluctuations of the vision, impairment of vision after physical exertions, paresis of the sixth nerves. Retinal hemorrhages and the lack of normally rounded outlines of the retinal vessels in one case were due to atheromatosis of the latter. C. Z.

A Contribution to the Genesis of Unilateral Choked Disc.—Schulz-Zehden, P., Berlin (*Klin. Mon. f. Aug.*, 1905, xliii, ii, p. 153). A man, aged 45, presenting the symptoms of brain tumor, suffered from dementia, weak memory, convulsions with loss of consciousness; patellar reflexes very marked. The ophthalmoscopic examination revealed atrophy of the right optic nerve (of some standing), papillitis (of 4.00 D. prominence = 1 1/3 mm.) of left eye. Schulz-Zehden assumed an intracranial tumor on the right side which by direct compression had led to atrophy of the right optic nerve and to papillitis of the left from increased intracranial pressure. This was verified by the autopsy. A cholesteatoma, 7.5 cm. long, 4 cm. high and 4 cm. wide, partially occupied the right anterior and frontal lobe into the right lateral ventricle, under disappearance of the right thalamus and corpus straitum. The right optic nerve, from the chiasm on, was crushed by the tumor and surrounded by it as far as to the optic foramen. With regard to this double action of the tumor on the optic nerves the case is unique. C. Z.

On Retro-Ocular Neuritis.—Gunn, R. Marcus, London (*Ophthalmic Review*, October, 1905). This term indicates "a group of cases clinically recognized by certain definite subjective symptoms, viz.: Rapid failure of vision, often in one eye only, particularly affecting the macular area and commonly accompanied by pain and tenderness in the orbit. The other chief clinical characters consist in impaired pupil reaction to light, a frequent absence of decided and early ophthalmoscopic changes, and a tendency to recovery."

Visual symptoms similar to those just enumerated occasionally occur in affections of the macula, and the differential diagnosis is often difficult during the early stages, the prominent symptom being rapid central failure of vision in one eye, and at first there are no very definite ophthalmoscopic changes; but in the retinal cases there is absence of associated pain; sometimes metamorphosia, sometimes positive scotoma, and possibly a history of recent exposure to excessive light; in such retinal cases we frequently find edema and small, round, pale, yellow spots in the macular region, but the optic disc usually remains unchanged. Again, in the early stages, retro-ocular neuritis may be simulated by functional amblyopia, and the same type of individual is often liable to both affections; the behavior of the pupil to light will serve to distinguish—there is invariably impairment of reaction even with moderate amblyopia from neuritis, but none in cases of functional origin.

Regarding the failure of vision, the writer says this varies very much in different cases of retro-ocular neuritis. There may be absolute blindness, for a time at least, in severe forms. In slight cases the vision may be 6/6, but the test letters are read slowly and with difficulty, and the patient complains of a mist obscuring their outlines; since these mild cases are generally uni-ocular, the difficulty becomes evident on comparison with the other eye. Between these extremes all degrees of visual failure are met with. A relative color scotoma at or near the fixation point can always be found even in the mild cases.

The visual acuity is less in a very bright light, and previous exposure to excessive light leads to temporary deterioration of vision. Not infrequently complaint is made of seeing objects as through a moving haze. The light sense as tested with Bjerrum's types is decidedly defective and the power of distinguishing colors is still more profoundly affected. The latter varies in degree, but there is always a complete or relative scotoma for red and green at or near the fixation point—the red object being described as black, and the green as white or gray.

Concerning the visual field, this is lost in varying degrees according to the severity of the affection, but the central portion is always involved, and this depends upon interference with the conducting efficiency of the macular fibers.

"One of the distinguishing features of retro-ocular neuritis is the *rapidity* of the visual failure. This is in contrast with the length of time that a papillitis may exist without the nerve function being affected, and with the usual very gradual failure when this does occur in the latter. But, though rapid, the failure is never *sudden* in pure retro-ocular neuritis, which again is in contrast with what obtains in arterial embolism or thrombosis, and in hemorrhage into the optic nerve sheath. As a rule, the vision gradually fails for about one to three days, when it reaches its maximum, and then remains stationary, for some time at least. The commencement of recovery is seldom long delayed, the improvement is generally steady and very gradual, the final result being commonly reached in about six weeks from the beginning of the attack. Even in severe forms of retro-ocular neuritis there is much more tendency to recover than would be expected, judging from our experience of other optic nerve lesions. At the same time there are exceptional cases in which no recovery has taken place, even when the initial loss was slight, and others where there is a liability to recurrences, so that ultimately the visual result is disappointing."

More or less pain referred to the back of the eyeball and also to the neighboring parts of the head is present in a very large percentage of cases (120 out of 350 collected for this series of observations). The pain usually precedes the loss of vision and frequently disappears when the latter is observed; when deep seated and persisting the prognosis is usually less favorable, indicating in all probability a gross periostitis at the optic canal. In many cases there is also tenderness on pressing the globe backward and on movements of the eyeball, a symptom often present even in slight cases and favorable as far as it has any prognostic value at all.

The ophthalmoscopic changes are divided into (1) comparatively early changes in the optic disc of a more or less inflammatory character (noted in 35 per cent. of the cases), and (2) pallor of the disc as a sequence (noted in 50 per cent. of the cases). The former are usually first found some days after the earliest visual failure and vary in degree from slight haziness of the disc edges, with fullness of the veins, to a decided papillitis; the slighter degrees are much the more common; such changes indicate proximity of the affected part of the nerve and in general have a relatively good prognostic significance. Pallor of the disc may be slight and limited to the temporal section or the whole papilla may become pale as in simple atrophy; with both there may be normal visual acuity and perfect field except central scotoma.

The etiology is varied and frequently obscure; in some forms there is undoubtedly inflammation, while in others the actual presence is a matter of speculation. Even in insular sclerosis, where a considerable number of optic nerves have come under pathologic investigation, authorities are much divided as to the character of the initial changes, and the etiology remains unexplained.

The writer finds a thoroughly satisfactory classification of cases according to causation impossible, since they overlap; but he presents the following: Class A, inflammation communicated to the nerve from neighboring structures, such as orbital cellulitis and periostitis. Class B, inflammations or other rapid changes occurring initially in the optic nerve, consisting of two subclasses: (1) local examples of general disease, such as gumma and tuberculosis, a large and heterogeneous collection of all the remaining examples of retro-ocular neuritis, such as influenza, gout, blood disorders, etc.—mostly all of a toxic nature. Of 223 cases of the last category, 51 belonged to the insular sclerosis group. C. H. M.

ORBIT.

Double Encephalocele of the Internal Angle of the Orbit of Facial Type.—Rohmer, Nancy (*Archives d'Ophtalmologie,* June, 1905). A male child of 8 months was brought to the clinic with double symmetrical tumors situated on each side of the nose which had existed since birth. The child was otherwise in good condition and presented no other malformation. Each tumor had the size and form of a pigeon's egg. The small extremity originated at the internal angle of the eye and the tumor extended along the side of the nose.

The tumors were rather firm, there was no fluctuation and no pain on pressure—the skin was healthy, without vascularization and free from adhesions. Pressure did not cause any diminution in volume. There was no pulsation or movement with respiration. The crying and straining of the child had no effect upon the tumors. They had increased a little since birth. The mother was anxious to have them removed.

The tumor on the right side, which was rather the smaller, was operated upon first. It was adherent only by a dense pedicle which had a deep attachment in the region of the unguis. The wound healed rapidly by first intention. Examination of the tumor showed it to be a meningo-encephalocele.

At the end of a month the second tumor was removed in the same manner as the first, except that a silk ligature was applied to the pedicle before the final section. There was no escape of fluid from the detached tumor, but at the end of thirty-six hours the dressings were wet with a clear liquid which oozed from the lips of the wound. Symptoms of meningitis followed and the child died in three days. There was no autopsy.

The author comments upon the difficulty of diagnosis in these cases. While the diagnosis of large meningoceles in the occipital region is generally easy, this is not the case with small tumors developed at the internal angle of the eye, the diagnosis of which is more frequently made during the operation, at the autopsy or by microscopic examination, since diminution of the tumor by pressure, movements synchronous with respiration and fluctuation, may all be present, as in this case. The congenital character of the encephalocele is an important sign, and if there are symmetrical bilateral tumors the suspicion of encephalocele is increased. He favors exploratory puncture, the danger of which, under proper precaution, he thinks, has been exaggerated. It is often the only means of definitely deciding the question. G. C. H.

Metastatic Suppurative Tenonitis.—Jocqs, Paris (*L'Ophtalmologie Provinciale,* July, 1905). In this article Jocqs gives an analytic résumé relative to an insidious form of iridochorioiditis, or uveitis, which is recognized, almost exclusively, by adherence of the iris to the crystalline lens, by cloudiness of the vitreous humor, and by an absence of any active reaction. The disease, he says, occurs most often in women, in whom it is observed ordinarily near the time of menopause, or in association with menstrual trouble, possibly by the result of toxins which have been produced by the retention of excrementitious products. The author deems it probable that, when it is present in men, it is the genito-urinary tract that is mainly responsible for the condition; and he mentions the frequency of uveitis in connection with gonorrhea, or as a sequel of vulnerant catheterism of the urethra. He says that at an advanced stage, though rarely, the ocular infection may lead to suppuration of Tenon's capsule.

He reports a case occurring in an old man who was afflicted with marked retention of the urine, and in whom there was purulent catarrh of the bladder. Years before, in the beginning of the urinary disturbances, the patient had had an uveitis which had produced blindness in the affected eye. Several years later, a fresh attack of uveitis was followed by other ocular complications, eventuating in suppurative tenonitis.

This form of tenonitis, the author says, is painless, while the serous or the rheumatic types are very painful. It is not serious, provided that the uveitis, which usually precedes it, has not already done irreparable damage. As regards the pathogenesis of the affection, he interprets the process as follows: The eye is an infundibulum, a sort of vascular lobule wherein deleterious material, brought into it by the circulation, may lodge. Thus it is the organ which is the most often affected by toxic, infectious or toxo-infectious agents. C. H. B.

PARASITES.

A Contribution to the Diagnosis of Echinococcus of the Orbit.—Bardelli (*Annali di Ottalmologia,* year xxxiv, Nos. 5-6, 1905). A patient, 39 years old, had marked exophthalmos of the right eye. Her family history was good. She married at 21 and had 5 healthy children. Following an attack of typhoid fever, she had pain in the right orbit and temporal region. A few months later the pain disappeared with diminution of vision and slight projection of the eyeball. An oculist whom she consulted prescribed iodid of potassium and mercurial inunctions. The disease progressed and pain returned—the exophthalmos increased, vision was reduced to counting of fingers. A diagnosis of orbital tumor was made and removal advised. The ophthalmoscope showed the papilla inflamed. Since the pain had preceded and accompanied the exophthalmos and the blood showed an increase of polynuclear eosinophiles, the writer diagnosed hydatid cyst of the orbit. An exploratory puncture withdrew fluid which contained no hooks. For 3 days the exophthalmos was better, as was the vision. The original condition returned. At operation 3 large hydatid cysts were found. R. H. J.

Clinical History and Pathologic Anatomy of a Case Probably of Calcified Cysticercus of the Orbit.—Pascheff, Sofia (*Archives d'Ophtalmologie*, July, 1905). The patient was a child, 7 years old. For sixteen days the parents had noticed that the right eye was bulging. This exophthalmos continued to increase until the eye could no longer be closed. There was no movement of the eye or fluctuation of the tumor, and the exophthalmos could not be reduced by pressure.

The tumor was removed by Knapp's transconjunctival method and was found to consist of an inflammatory fibrous membrane which served as a pocket for a cyst, a fluid rich in chlorids and a little cyst with amorphous and calcified walls. G. C. H.

PATHOLOGY.

Inoculations of Eyes of Rabbits with Syphilitic Material.—Schulze, Walter, Berlin-Friedeman (*Klin Mon. fuer Aug.*, 1905, ii, p. 253). At the instance of Dr. Siegel, who first determined cytorrhyctes luis as belonging to flagellata, inoculated eyes of rabbits, i. e., the iris directly, with syphilitic material, and studied the results. The iris was slightly ripped with the lance-shaped knife, opening the anterior chamber, and the syphilitic material (pieces of non-ulcerating initial sclerosis, blood taken shortly after the onset of roseola, emulsion of the kidneys of a rabbit previously infected) was introduced on a spatula, which had been glowed. Material, preserved in glycerin and 42 days old, remained without reaction in the anterior chamber. For control, monkeys were subcutaneously infected with the same material as the rabbits, and from these rabbits.

The observations on 26 rabbits, arranged in tabular form, may thus be summed up: The first wound reaction having subsided after 2 days, the injection increased, cornea and aqueous become opaque, pupil narrow, iris hyperemic, and small nodules developed on the place of inoculation. The inflammation was at its acme on the 10th or 14th day. The general condition of the animals grew worse, and a number of them succumbed within the first 2 weeks. After 14 days the nodules of the iris were more sharply defined, attained the size of a millet seed, lost their red hue and turned gray. Gradually they shrunk, but in some animals were still recognized after 3 months.

It is a chronic process which chiefly affects the blood vessels. The intima of the intermediate arteries was loosened, and mononuclear leucocytes pierced the wall, the intercellular tissue of the iris proliferated. The vessels were surrounded by a more or less marked hyalin seam and the tissue around the larger arteries became edematous. The controlling inoculations of monkeys with iris, treated according to the above described methods, proved the syphilitic nature of the affection. The number of cytorrhyctes in the iris was small compared with that obtained from the kidneys 2 weeks later. Schulze never found spirochætæ in these cases, only in ulcerated sclerosis, and then considerably less than cytorrhyctes. The parasites and the histologic conditions are illustrated. C. Z.

EXPERIMENTAL INVESTIGATIONS ON THE INFECTION OF CORNEAL WOUNDS WITH SALIVA.—HOTTA, G., from Japan, volunteer assistant at the eye clinic of Professor Uhthoff in the University of Breslau (*Klin. Mon. fuer Aug.*, 1905, ii, p. 237). Saliva, which normally abounds in micro-organisms, may come in contact with corneal wounds in 2 ways: 1. By objects contaminated with saliva. 2. Infection of operative wounds by drops of the saliva of the operator. Hotta investigated these conditions experimentally, and, after enumerating the bacteria usually found in the mouth (pneumococcus, streptococcus and staphylococcus pyogenes), he gives the following epicrisis: Infection occurs without fail if the saliva is brought into pocket wounds of the cornea, whereas erosions or perforating cuts are much less exposed to reception of micro-organisms. Another chief predisposition to infection is given by impeded drainage of the tears from an affection of the lacrimal passages. Infection from the air or the salivary drops of the surgeon during eye operations is not very likely on account of the short duration and small extent of the operative surface, so that special precautions in that direction by veils are not indicated. Only if the operator is suffering from coryza, cough or other affections of the mouth, or if he, as teacher, is compelled to speak much during the operation a veil of several layers of gauze is advisable.

To show the difference in the effectiveness of veils consisting of a varying number of layers of gauze, Hotta made the following experiments: After gargling his mouth with bouillon containing cultures of bacillus prodigiosis, and speaking for 2 minutes toward a Petri's plate, covered with neutral agar, under an inclination of 45° to 60° at distances of 25, 30, 40 c.cm., he found, from an average of 7 experiments, the number of cultures without gauze 24, through a single sheet 7, double 1, 3-fold 0, at a distance of 25 cm. Axenfeld, Eversbusch, Haab, Kuhnt and others have expressed themselves in favor of the usefulness of mouth veils in eye operations. C. Z.

PHYSIOLOGY.

THE CONDITION OF THE PUPIL AFTER INTRACRANIAL DIVISION OF THE OPTICUS.—ABELSDORFF, Berlin (*Arch. f. Augenheilk.*, lii, H. 2), has repeated the experiment of Marenghi, in which he found that the division of the intracranial portion of the optic nerve in rabbits did not destroy the light reaction of the pupil. That he might better observe the pupillary reaction he employed only albinotic rabbits. The reaction was carefully tested at each stage of the operation. He found that after the division the pupil on the operated side became wide and fixed, even to intense magnesium light. The pupil of the fellow eye reacted promptly. In one experiment the operation was performed in two stages. After removal of the superior bony ring of the foramen opticum, the wound was closed, and the following day, upon testing the pupillary action, it was found that the pupil on the operated side reacted less promptly and did not become as narrow as that of the fellow eye. After dividing the nerve, the reaction was lost. W. Z.

ON THE ORIGIN OF THE PAIN IN PHOTOPHOBIA AND THE BLEPHAROSPASTIC SYNDROME.—FRIDENBERG, PERCY, New York (*Ophthalmic Record,* August, 1905). After discussing the views expressed by Nuel, von Frey, Nagel, Axenfeld, Bjerrum, Handfield Jones and Romer, the author concludes that two phenomena have been confused, viz., dazzling and pain, and that this may explain the conflicting statements of these observers. That as a description of a physiologic process "photophobia" is as meaningless as "myopia." The condition found associated with blepharospasm and lacrimation, in the most varied forms of superficial irritation, is not fear of light so much as fear of opening the eye, fear of moving the globe or lids—the instinctive desire to protect the inflamed, irritated or injured surface against all external agencies, such as cold, wind, dust or mechanical agencies of any kind. If such an eye is anesthetized with cocain these symptoms for the time cease. Real light-dried, independent of superficial irritation, manifests itself in quite another way. Discomfort is felt on exposing the eyes to bright light after they have adapted themselves by dilatation of the pupil to comparative darkness. These two forms of photophobia he describes as, first, specific, idiopathic, primary, retinal photophobia, representing a reflex from the optic nerve to the sensory branches of the trigeminus or ciliary nerve, or to the motor nerves of the eye and lids, and due to hyperesthesia of the nerve filaments engaged in light perception, or to excessive stimulation of normal structures; second, secondary, symptomatic, superficial, corneal photophobia, due to hyperesthesia of the sensory nerve terminals in the skin of the lids, cornea, conjunctiva, and ciliary body, as well as in the mucous membrane of the nose, in the maxillary antrum, teeth, and representing the reflex from the sensory fibers of the trigeminal nerve, and other nerves, to the motor branches of the facial.

M. B.

VISUAL AND HEARING ACUITY.—STRUYCKEN (*Tydschr. v. Geneesk.*, Jan. 21, 1905), reminds us of the imperfections of our highest senses in perception of the outside world. The measurement of their properties with strict rules will remain the first information of their action for a somewhat rational knowledge.

Light and sound are both harmonious vibrations, keeping to the law of the sinus-relation. Both are determined as to their energy through time and amplitude, while masses (electron and matter-molecule) are always known or of equal value. The remarkable difference in the relationship as to the sensitiveness for direction and time determined Struycken to compare hearing and visual acuity, taken in their most extensive meaning.

1. The direction-differentiation power. The coarse work is done for the eye by its muscles and the retinal periphery, the finer work is done by the macula lutea, helped by very sensitive memory. This we usually call visual acuity, which is 1° (Snellen) for practical purposes. The ear here is far in ărrears, 15° to 30° difference of angle are not recognized with certainty; local conditions and individual differences have great influence.

2. The intensity-differentiation power. This is known for the eye as the power of distinguishing clearly: it changes from 1/40 to 1/150 and shows a regularity known as the law of Fechner-Weber. The ear also here is behind. Differences of intensity of 1 are still perceived and show a curve, which descends regularly to the maximum, while for the eye this goes nearly horizontal. A strict comparison is impossible, as observation and comparison must happen simultaneously for the eye, successively for the ear.

3. Determination of distance. The eye does it through accommodation and with the muscular-sense for the binocular vision. The ear performs this only in connection with the memory-image (which the eye possesses in a much higher degree) and through the feeling of the vibrations, when the sound source nears the auricle.

4. The time-differentiation power. This we call for the eye the color perceptive power. The eye must be able to distinguish 1 to 2/10-12 of a second, as this is the time interval between the vibratory duration of red and yellow, green and blue. However, we appreciate in every spectral color tints, so that if we distinguish colors with a difference of vibratory length of 0.005 μ, the difference in time becomes $1/10^{15}$ second. The ear lacks behind; musicians can distinguish tones in the intermediate octaves with a difference in vibration of 1/1000. But this power is present for nearly 8.5 octaves, while the eye has only one octave.

5. The minimum perceptible. We find as value for the eye $1/10^8$ erg a second. One erg is $+1/98 \times 10^6$ kilogrammeter, so that the minimum expressed in this measure is $1/10^{16}$. This cypher has been determined in the following way: A normal candle gives per second 2/10 gramcalory in irradiation, including the heat rays. If these are absorbed by water there remains for the light 2.5 per per cent. A star of the sixth magnitude is easily seen after dark adaptation, expressed in luminous strength of a normal candle; this must be placed at a distance of 11 kilometer to give the same impression. The pupil with an opening of 16 mm.^2 and with an apperception time of ¼ sec. one comes easy to the above given cypher. For determination of the minimum for the ear, we make use of after-images. When the difference in time between two light sensations is smaller than 1/10 to 1/30 second they cover. Most tuning forks vibrate with a larger frequency, and Gradenigo made use of the vibrating tuning-fork self to read directly the amplitude. After some modification we can read 10 times more than Gradenigo. So the amplitude can be read till 1 μ. For the higher tones we use the decrement law of Gauss: Freely vibrating elastic bodies show that as the times grow arithmetically the amplitudes decrease geometrically. The greatest sensitiveness for the ear is between c^2 and c^4 with limits of $1/10^6$ to $1/10^7$ μ. This value is only a million times larger than that of the ether amplitude; the mass of the electron for the eye is some 20,000 times smaller than that of the air molecule, and the energy of the light, therefore, still much smaller.

6. The minimum of the number of vibrations is for the ear 2-10; one-half billion for the eye when 0.001 sec. is the time minimum;

apparently this last one is some hundred times too large. Experimentally Struycken succeeded in getting a light impression even with a value smaller than 1/50000 sec. Was the sunlight refracted through a prism, then the time duration had to be lengthened hundredfold and the different colors gave enormous differences.

The ear excels in one way the eye. If we look at the curves representing the vibrations even of simple sounds, then the eye is unable to analyze them, while this analyzing power is possessed in a high degree by the ear and is followed directly by ideas and memorial impressions. E. E. B.

LENTICULAR IMAGES DUE TO REFLECTION FROM THE NUCLEUS OF THE NORMAL LENS.—SCHMIDT, Wien (*Arch. f. Augenheilk.*, B. lii, H. iv), in connection with the interesting observation of Hess (*Arch. f. Augenheilk.*, B. li, H. iv), calls attention to the fact that Bayer some years ago (*Annual Ophthalmology*, 1900), quoted him (Schmidt) as describing two upright and two inverted lenticular images, and in some instances more than four, plainly visible in the normal eye of the horse, especially in middle or old age.

W. Z.

ON HYGIENE OF THE EYES.—HAAB, O., Zuerich (*Schweiz. Paedagog. Zeitschrift*, 1904). This is a popular address, delivered by Haab as rector of the University of Zuerich, and sets forth general principles for preservation of normal sight. After preliminary remarks on the physical act of seeing, presbyopia, hypermetropia, myopia and the beneficial effect of fully correcting glasses, the prevention of blennorrhea neonatorum and veneric diseases, scrophulosis, smallpox and injuries are very lucidly discussed. C. Z.

EXPERIMENTAL INVESTIGATIONS UPON THE CEREBRAL OPTICAL SYSTEM.—BOUMAN, K. H. (Doctorate Thesis), gives, first, the history of this problem of the normal and microscopic anatomy of the subcortical ganglia of the rabbit; this is followed by the description of the technic. He used new-born and older animals; the cerebrum of 20 cases gave trustworthy results. The method of Marchi was used if the animals were killed 2 to 3 weeks after the operation; if they live 3 weeks till 4 months after the operation then the coloring method of Weigert-Pal or picrocarmin was chosen. One or both retinæ were destroyed, the cortex cerebri of the occipital lobe was wounded entirely or partly on one or both sides, or one retina was removed with the cortex of the crossed hemisphere, or one or both anterior corpora quadrigemina were partly removed, or one retina was destroyed with the crossed corpus quadrigeminum and the occipital cortex of the opposed hemisphere. Bouman reaches the following conclusions:

The ganglion cells of the retina send their axis-cylinder centrally into the optic nerve. In the chiasm a partial decussation occurs, the direct bundle being much smaller, taking in the peripherical part of the optic tract a more or less isolated position, in the central part mixed more and more equally with the other fibers. These centripetally conducting fibers end freely in the ganglia of the basis cerebri. The optic fibers of the other optic nerve end in the ventral nucleus of the corpus geniculatum externum of the same side; a part of the optic fibers from the crossed optic nerve ends in the ventral nucleus of the opposite corpus geniculatum; another part ends in the dorsal nucleus of this ganglion; still another part passes this corpus geniculatum and ends with free arborisation in the superior layer of gray matter of the corpus quadrigeminum; a fifth part goes still farther through the tractus peduncularis transversus to mingle with the fibers of the pedunculi cerebri.

The peripherical neuron, which ends for the greatest part in these basal ganglia, connects directly or through connecting cells with the peripheric neuron, which begins here. Its ganglion cells lie in the dorsal nucleus of the corpus geniculatum externum and send their axis-cylinders toward the cortex of the occipital lobe, go partly through, partly along the ventral nucleus, through the hemisphere-bundle of the tractus and in its medial part to the posterior parts of the internal capsule, bend around the ventricle, then pass through the sagittal white substance of the occipital lobe to finish in end-arborisations. Centrifugal nerve fibers also originate from the cortex. They also pass through the sagittal white matter of the occipital lobe, then through the posterior part of the capsula interna, bend around the tractus within the hemisphere-bundle, pass the ventral nucleus of the corpus geniculatum and finish in the dorsal nucleus of this ganglion. A second part does not form connections with this nucleus, but finishes in the dome of the corpus quadrigeminum anterius after having taken its course through the brachium conjunctivum and the superficial layer of fibers of this body. A third and smaller part does not go in the tractus opticus, but goes through the lateral bundle of the pedunculi cerebri.

The dorsal nucleus of the corpus geniculatum externum contains large ganglion cells, which form the beginning of the second centripetal neuron and connecting cells (cells of the second order), which connect this neuron with the extracerebral one.

The ventral nucleus contains ganglion cells, which form the beginning of the neuronic system which does not go to the cortex.

which bends to the median, and reaches perhaps the opposite side. This neuron is connected directly or through connecting cells with all fibers of the direct optic bundle and partly with the fibers of the indirect bundle. The corpus quadrigeminum anterius contains in its superficial layer of fibers fibers which come from the retina and from the cortex and which both end there in the surrounding gray matter. The ganglion cells of the superficial layer of gray matter send their axis-cylinders neither toward the cortex nor to the retina, but are connected with the different nuclei of the medulla oblongata, with the pons and perhaps with the cerebellum.

When only the superficial gray layer of the corpus quadrigeminum anterius was wounded, then a decided visual disturbance appeared without changes of the pupillary or winking reflex.

Comparative anatomy shows us how the development of the thalamusnuclear group (that is thalamus and corpora geniculata) coincides with that of the cortex of the cerebrum, and the anterior corpus quadrigeminum becomes smaller as the hemispheres enlarge. With men this antithesis is the most pronounced; the gray mass of the corpus quadrigeminum is reduced to a minimum, the limits of the different layers can be hardly determined microscopically and other cerebral parts take their place. The superficial layers of the corpus quadrigeminum anterius and the part of the cortex, called by Munk "Sehsphaere" or the projection of the subcortical optic ganglia on the cerebral cortex (von Monakow), may be considered as two vicariating centers, of which the first becomes smaller as the latter increases. E. E. B.

EYE DEFECTS ASSOCIATED WITH THE DEVELOPMENT OF PUBERTY.—WHEELOCK, K. K., Fort Wayne, Ind. (*Medical Record*, Oct. 21, 1905). The writer refers to L. Webster Fox's paper on "Contraction of the Visual Field, a Symptom of Anesthesia of the Retina in Children," which appeared in *The Journal of the American Medical Association* for Jan. 7, 1904, and gives the histories of a number of cases resembling those reported in the paper referred to. These cases all had (1) defective vision for distance and reading, (2) limitation of field for form and color, (3) no changes in the fundus, (4) age from 8 to 10 years, (5) absence of chlorosis or hysteria, (6) blood examination showing leucocytosis, (7) complete restoration of sight and field occurring only after the establishment of the menstrual function in the female and the seminal function in the male.

The writer explains the phenomena by changes in the optic nerves and blood stream incidental to the development of the reproductive organs. The treatment which he found most effective was the use of iron, strychnin and manganese. C. H. M.

How Shall the Eye Be Protected from the Ultra Violet Rays?—Dor (*Revue d'Ophtalmologie,* Oct. 31, 1905). The author states that the injurious effect of the ultra violet rays upon the eye has been actually demonstrated. The two authors who have contributed most to establish this are Widmark (*Skand. Arch.,* 1889-1892), and Birch-Hirschfeld (*Archiv. f. Ophth.,* lviii, 468-562, 1904). It is also proper to mention the works of Schulek (*Ungar. Beitr. z. Augenh.,* ii, 467), Hertel (*Cong. Heidelberg,* 1903), and of Staerkle (*Arch. f. Augenh.,* vol. l, 121-144, 1905).

The result of these researches is that the chemical rays produce lesions of the cornea, of the lens and of the retina, and that they are exclusively the ultimate violet rays which produce experimentally the identical lesions found in snow blindness and of blindness from lightning.

When, in the control experiments, only the luminous rays are allowed to pass and the chemical rays are absorbed, it is impossible to produce the lesions above mentioned. All the details of these experiments have been published long since in the work of Birch-Hirschfeld, to which Dor refers for study, remembering simply the fact, which has been established scientifically, that the chemical rays are injurious to the eyes, also that the luminous rays proper are without injury.

The researches to which Dor refers were made with very powerful lights, it being possible by the latter to produce experimentally appreciable lesions in a very short time; but it is evident that the corollary is correct that the same lesions follow from less strong illuminants if they are prolonged in their application. The existence, clinically, of snow ophthalmia shows the dangers from reflection from intense daylight. It is necessary to state that if a perfectly normal eye be exposed so as to develop inflammation of the cornea, lens or retina under the influence of illuminous sources rich in chemical rays, an eye predisposed to the injury will require less light with chemical rays in order to produce the deleterious effect. Clinical experience teaches that most persons prefer to work with the aid of petroleum lamps rather than with the Auer illuminant, and Staerkle proved in photographing the spectrum that the petroleum light gives much less of chemical ray than the other artificial illuminants.

In order to interfere with the ill effect of solar light, which, of course, includes the chemical rays, patients lessen the totality of the luminous pencil which would otherwise penetrate their eyes.

Dor states that he asked Jules Peter, optician of Lyon, to find for him a glass which would exclude the chemical rays, and the optician found by photographic experiment that the yellow glass possesses the excluding power to a high degree. And Dor considers, as also do Freuzol, Dolganow and Klimowitch, and recently Staerkle, that the yellow glass is the "verre de conserve" for vision. Dor also states that this glass should be worn especially after cataract extraction; and he proposes the name Achimic impenetrability of glass in place of Anactinic, which is impenetrability to luminous rays. B. E. F.

REFRACTION AND ACCOMMODATION.

Experimental and Clinical Evidence of Dynamic (Spastic) Astigmatism.—Eaton, F. B., San Francisco (*Jour. A. M. A.*, Aug. 26, 1905), defines dynamic astigmatism as a condition of the eye due to dynamic changes in its media which prevent homocentric rays from being brought to a focus on the retina. There is a preponderance of evidence and opinion that such dynamic changes occur, but writers are nearly all silent as to its clinical significance. He outlines Martin's clinical methods and findings in order to adduce some of his own, and describes briefly certain subjective and objective investigations which apparently prove dynamic astigmatism caused by the accommodative apparatus, on the one hand, and by the extra-ocular muscles on the other. He presents some simple examples of Martin's cases and his own and claims that dynamic astigmatism exists very frequently, nearly always in tired, irritable eyes which are affected with organic (corneal or lenticular) astigmatism. It is often overlooked simply because it is so often thought that the ciliary muscle and convergence excess have been paralyzed completely by some weak or strong cycloplegic. It predominates in youth and does not disappear in the old. He discusses the mechanism of dynamic astigmatism and endeavors to estimate the relative importance of the action of the accommodative apparatus, on the one hand, and of the extra-ocular muscles on the other. In conclusion, he insists that dynamic astigmatism is of practical clinical importance and makes a plea to consider in many cases the total refractive error in doubt until time, cycloplegics, rest, aided, if necessary, by the hypodermic use of hyoscin hydrobromate and bromids or other sedatives, with patient "fogging" at times, has eliminated all dynamic contractions. M. D. S.

Change in Astigmatism Produced by Chalazion.—Bruns, Henry Dickson, New Orleans (*Ophthalmic Record,* September. 1905). The author has had his refraction carefully examined several times since 1887, and has worn the same correction for his right eye, + .50 w. + .50 ax. 90°, up to the present time. The ophthalmometer has during this time recorded an astigmatism of .50 ax. 75°. In May, 1904, a small chalazion, about 3 or 4 mm. in diameter, developed with moderate inflammation, in the upper lid. At the same time the vision became uncomfortably dim at all distances—R. E.V. = 20/30. The ophthalmometer now recorded no astigmatism. The vision was raised to 20/20, with + .50 w. + .50 ax. 165°. This condition lasted a month or so, when the chalazion gradually begun to disappear, and gradually the vision became clear and comfortable with the old correction, and the ophthalmometer again recorded an astigmatism of .50 ax. 75°. M. B.

THE INFLUENCE OF THE CERVICAL SYMPATHETIC ON THE ACCOMMODATION.—TUINZING, E. C. (Doctorate Thesis), gives a historic-critical exposition up to the present time, showing how it is indifferent for the Helmholtz hypothesis to demonstrate an inhibitory nerve, which would make the Tscherning theory much more plausible, and how at different times active accommodation for distance has been accepted (especially from the French side: Morat and Doyon, Terrien and Camus). Tuinzing used dogs and cats, which have an appreciable extent of accommodation. He measured skiascopically, as he found this to be the most reliable method; previously he had performed a double iridectomy in one meridian, so that the changes from the enlargement of the pupil through sympathetic excitation were excluded. He now found that the sympathetic has no influence whatever over the process of accommodation. Section of this nerve does not cause spasm of accommodation any more than excitation gives negative or positive accommodation. Neither can excitation of the sympathetic have an influence as a brake on an excited increased accommodation. Excitation of a long ciliary nerve does not produce lessening of the accommodation. The extent of accommodation in the cat is small—not more than two diopters. Instillation of eserin does not lessen the accommodation with the cat, either in the horizontal or in vertical meridian. Dilatation of the pupil does not influence the refraction with the cat as determined skiascopically. E. E. B.

RETINA.

A CASE OF BILATERAL DETACHMENT OF THE RETINA WITH INCREASED TENSION IN RETINITIS ALBUMINURICA GRAVIDARUM.—SCHERENBERG, K., Koeln (*Klin. Mon. fuer Aug.*, 1905, xliii, ii, p. 31). A woman, aged 34, who had well recovered from 5 former gravidities, now pregnant in the seventh month, had noticed failure of sight for two weeks. V. = 6/30 in each, extensive albuminuric retinitis with few hemorrhages, large white patches and very marked edema of the retinæ. Urine contained 5 per cent. albumin. After 6 days the retinæ were widely detached, the discs showed optic neuritis, T. = + 21, V. = 1/45. Since the general condition grew alarming (pulse 120, respiration 60), premature birth was instituted on the third day and a dead child delivered. The patient died two days later in a uremic epileptiform attack and coma.

The retinæ showed almost total detachment, numerous hemorrhages, thickening of the nerve fibers in form of spindles which probably corresponded to the ophthalmoscopic patches, degeneration of ganglia with formation of cavities in the ganglion layer, filled with irregularly arranged, very fine or varicose fibers. Very interesting and important for the origin of the detachment were the changes of the vessels, chiefly those of the chorioid, ciliary body and iris, which resembled those in chronic Bright's disease. They were in a state of thrombosis, perfect obliteration and hyalin degeneration, giving rise to circulatory derangement, leading to exudation, with subsequent detachment of the retina and increased tension. There was no fatty degeneration of the retinæ.

Another case is related to illustrate the predisposition of pregnant women with albuminuric retinitis to cerebral complications.

Scherenberg advocates early artificial interruption of gravidity in cases of nephritis complicated with albuminuric retinitis. The prognosis of albuminuric retinitis quoad vitam in the pregnant is not as bad as in Bright's disease, but may suddenly turn worse by uremia and edema of the brain. C. Z.

FIBRILLARY EDEMA OF THE RETINA AFTER CONTUSION.—FRIDENBERG, New York (*Arch. f. Augenheilk.*, lii-3). These changes had been observed in a man who had been struck in the right eye by a sand bag. There was ecchymosis and swelling of the lids and marked congestion of the conjunctiva. The pupil was 3 x 4 mm. and sluggish. The iris showed incomplete radial tears at the pupillary border. There was iridodonysis in the lower segment, but the lens was not dislocated. The cornea was hazy. Indirect method showed in the macular region a peculiarly silver-gray oval ring, appearing as though seen through a convex-cylindrical lens, enlarged and distorted. By direct method the macula appeared saturated with serum, the usual granular stippling being absent. Surrounding the macula there was an irregular oval ring with a wavy, crinkled contour. The macular reflected strongly and varied from a milky-white to a silver-gray. From this oval there radiated a large number of straight, brilliant, white, strongly illuminated streaks, which could be discerned for a distance of several discs' diameter outward into the fundus and corresponded in size and form to the nerve fibers coursing in the plane of the smaller vessels. The vascular twigs extending toward the macula from above and below were bordered by white lines resembling frost and giving a thickened appearance to the individual branches. With the electric ophthalmoscope the perivascular reflexes were more distinct, more prevalent and more brilliant. With this instrument numerous white streaks were seen to extend from the papilla toward the macula. Under to and fro movements of the mirror these streaks of reflected light darted here and there, a given point appearing now bright, now dark, the whole phenomenon resembling a northern light. V. = fingers at 2 m. Subjective central scotoma for color and white. Visual field, when the patient was seen for the last time, a few days later, V. = 20/200. The author says that the condition bore a striking resemblance, pathogenetically and ophthalmoscopically, to traumatic swelling and subsequent sclerosing of the lens fibers. Here, as is well known, after injury from a blunt force, we not infrequently find a transient opacity, the result of edema of the lens fibers, dependent upon the imbibition of aqueous through a rent in the capsule, often so small as to be invisible. In not a few cases the stage of imbibition gives place to shrinking with sclerosis and complete opacification of the lens fibers. He assumes that in fibrillary edema of the retina there is imbibition by the individual fibers through the saturation of the retinal parenchyma with serous fluid which had its origin in shock (vasomotor), palsy of the capillaries of the retina and chorioid. W. Z.

CYANOSIS RETINÆ.—POSEY, WILLIAM CAMPBELL (*American Journal of the Medical Sciences,* September, 1905). This term is used to describe changes in the fundus which are observed in congenital heart disease with general cyanosis, and was first employed by Liebreich in 1863. Knapp, however, was the first to call attention to the condition, in 1861. von Ammon had previously, in 1841, described the exterior of the eye in congenital heart disease, but the ophthalmoscope had not then been invented. In comparison with the frequency of congenital heart disease, but few cases have been reported, largely probably because of the failure to examine the fundi of these cases. The changes in the fundus are striking, the retinal vessels attaining a size rarely equalled in other conditions. The veins are more affected than the arteries; they both also become much darker in color. Even the peripheral twigs become distended and vessels usually invisible may be seen. There is no pulsation. Small hemorrhages may occur near the disc or more rarely larger ones in the macula. The exterior of these eyes, too, shows marked signs of cyanosis, the lids are blue and the sclera violaceous, and the conjunctival vessels distended. The congenital diseases and malformations of the heart which cause these changes are various. The cause of the dilatation of the vessels has been somewhat in dispute, but most writers attribute the dilatation of the vessels to a stretching of the walls and consider this dependent upon a lessened resistance in the walls due to disturbance in nutrition. Recent observations by Babinski and Nagel indicate that the ophthalmoscope may be of use in the diagnosis and prophylaxis of these cases. Babinski has reported a case in which a marked dilatation of the retinal vessels preceded other evidence of general cyanosis, and Nagel asserts that if the retinal arteries, as well as the veins, are darker and broader than normal a connection of the two sides of the heart is assured, but if only the veins are involved he believes that some other congenital lesion is indicated which does not permit the admixture of venous with arterial blood. As the diagnosis in cases of congenital heart disease is at times practically impossible, these observations, if true, would be of great help. Posey then gives the histories of 16 cases and adds 2 more.

E. E. J.

Congestion of the Retina.—Castresana, B., Madrid (*Archivos de Oftalmologia,* July, 1905). After a study of a number of cases the author confirms the opinion, expressed by Santa Cruz, that papillo-retinal hyperemia or congestion is frequently a lesion *per se,* entirely independent of any other ocular complication, and he classifies it as (a) symptomatic, due to errors of refraction (asthenopia) or secondary to some intraocular inflammation, and (b) as essential or that confined to the retina itself, being induced by excessive use of the eye (asthenopia?), exposure to intense solar or electric light, disturbances in the general circulation, vasomotor changes, cerebral hyperemia, violent exercise and other unknown causes.

Active papillo-retinal congestion appears most frequently in the professional classes or those continually using their accommodation. It is accompanied by cephalagia (constant), muscæ volitantes, photophobia, and the vision is generally affected. The difference in refraction noted is held to be due to the congested condition of the retina, which is thereby moved forward, resulting in a perceptible shortening of the antero-posterior axis of the eye, rather than to ciliary fatigue, as has been advanced by certain ophthalmologists. It is admitted that the latter theory explains the acceptance of a stronger plus lens by a hypermetrope (or weaker minus by a myope), "but this hypothesis does not explain the increase in refraction in an emmetrope" (?). The condition pursues a slow course, and, if left to itself, may terminate in hemorrhages, optic neuritis, atrophy, or increased intra-ocular tension. Therapy recommended: rest, obscure light, correction of errors of refraction and general treatment directed toward the etiology when it can be learned. The advantages of phototherapy have not as yet been sufficiently demonstrated. The clinical histories of several cases are given in detail.

H. M. F.

SINUSES AND NASAL CAVITY.

THE OCULAR SYMPTOMS OF AFFECTIONS OF THE ACCESSORY SINUSES OF THE NOSE.—POSEY, WILLIAM CAMPBELL, Philadelphia (*Jour. A. M. A.*, Sept. 9, 1905), states that orbital abscess is usually secondary to disease of the sinuses, that displacement of the globe may be occasioned by encroachment on the orbit by a distended sinus, that blindness may result from an involvement of the chiasm through the roof of the cavity or by an implication of the optic nerve as it passes through its foramen in the sphenoid as a consequence of an inflammation in the cells within that bone. Furthermore, some facts not so well recognized are that very pronounced disease of any, or, indeed, of all, the sinuses may occur without occasioning any subjective nasal symptoms, and that repeated rhinologic examinations may fail to discover pus in the nares in sinusitis, the affection of the cavity being only detected by catheterization and irrigation. Involvement of the optic nerve, as a consequence of ethmoidal or sphenoidal sinusitis may vary in degree from a simple edema to an active retrobulbar inflammation. Even slight involvement of the optic nerve may make the patient conscious of a dimness in the affected eye, and it may be ascertained that the dimness was occasioned by a diminution in the light sense, due to the edematous infiltration of fibers which supply the macular region. Neuritis due solely to sinus inflammation is unilateral in character. A chronic distention of the walls of a sinus (hydrops) may occasion dislocation of the globe with more or less functional derangement of the ocular muscles, giving rise to asthenopia or actual diplopia; or the refraction of the eye may be altered by pressure, causing changes in the axis and amount of astigmatism, and disturbance in the proper canalization of tears from a displacement of the puncta lacrimalia. One of the earliest signs of involvement of the orbit is a change in the contour of the orbital ring occasioned by a distinct projection into the orbit or by periostitis. A general orbital cellulitis may be occasioned by an acute perforation of any sinus. Sinusitis may indirectly, by way of the nasal mucous membrane, be a frequent cause of disease of the lacrimal apparatus. Edema of the lids is one of the most significant symptoms of disease of the accessory sinuses and is to be distinguished from the inflammatory swelling and thickness of the lid which results from cellulitis, as it is entirely non-inflammatory in origin. Paresis, and even paralysis of one or more of the eye muscles, may occur as a consequence of sinusitis. He is of the opinion that many of the cases of palsy of extra-ocular muscles attributed to rheumatism are due to an affection of a sinus. Chronic disease through involvement of the mucous membrane of the nose gives rise to inflammation of the conjunctiva and rarely of the cornea. Pupillary changes are sometimes observed and affections of the uveal tract have been noted. Asthenopia is not rare in sinusitis, and in many of the cases it may be attributed to the conjunctivitis excited. In others it is traceable to an interference with the ciliary muscle and diminution in the range of accommodation. Headache and neuralgia are rather constant symptoms of sinusitis. The headaches occur usually in the morning, are characterized by continuous pain with severe exacerbations, which radiate around the orbit and within the zone of distribution of the fifth nerve; or they may take the form of a general head pain, of a facial neuralgia or of a toothache, and may be constant or recur in severe paroxysms. Neuralgia of the supraorbital nerve is very significant of frontal disease, and dental neuralgia will frequently indicate the existence of antral disease. Frontal headache is suggestive of ethmoidal and frontal disease, while occipital pain is usually caused by sphenoiditis, though disease of the frontal sinus may evidence itself in pain in that locality also. Pain in the vertex and at the back of the eyes is usually caused by sphenoiditis. A distressing pain across the bridge of the nose is peculiar to ethmoid disease. The headache may simulate migraine, or even the rare condition known as "migraine ophthalmoplegic." M. D. S.

A Contribution to the Anatomy and Pathology of Orbital Wall Blood Cyst of the Frontal Sinus.—Bossalino (*Annali di Ottalmologia,* xxxiv, Nos. 5-6, 1905). The patient, 29 years old, had been struck in the eye with a piece of iron. The blow caused sharp pain, with tumefaction of the orbital region, slight exophthalmos and rupture of the cornea, with prolapse of the iris. Vision was 5/7. After treatment the patient disappeared for 2 years. On his return to the clinic the right frontal eminence was more prominent than the left. Just below the orbital arch was a swelling. There was an external squint of 25° and exophthalmos. The tumor was carefully removed and had the aspect of a small nut. The outer surface was lobulated. The cavity contained a pultaceous mass of a clear, chocolate-red color. Microscopically this mass was essentially composed of red corpuscles, an amorphous detritus of red color, numerous crystals of cholesterin and a myriad of crystals of wine-red color of hematoidin. The walls of the cyst were made up of connective tissue which externally had a fibrillary aspect; they contained masses of pigment of wine-red color. The diagnosis was blood cyst. The author concluded that the cyst developed in the frontal sinus; that the anatomic report was so typical that he could affirm with certainty that during life cystic tumors, neither parasitic nor epithelial but due solely to trauma, can develop. R. H. J.

A CASE OF MONOLATERAL RETROBULBAR OPTIC NEURITIS IN RELAPSING EMPYEMA OF THE SUPRAMAXILLARY ANTRUM.—PIHL, A., Gothenburg, Sweden (*Klin. Mon. f. Aug.*, 1905, xliii, ii, p. 50). A man, aged 42, who had offensive purulent discharge from his left nostril for 16 years, noticed for a year a gradual impairment of V. of left eye to 0.1. After the radical operation of empyema of the ethmoidal bulla and of the left supramaxillary antrum, according to Kuester, from the canine fossa, V. rose to 0.2. Within the next three years the empyema relapsed twice, each time associated with deterioration of sight, which became better after the pus was evacuated. At the first examination the ophthalmoscope revealed only a very slight redness of disc. V. F. showed a central defect (6° to 12°) for red and green (squares of 1 cm.) and for blue and white (squares of 4 mm.). Pihl discusses in detail the intimate connection between diseases of the nose and eye. C. Z.

THE EFFECT OF THE PRESENCE OF ADENOIDS AND OTHER ABNORMALITIES IN THE NASO-PHARYNX OF SOME AFFECTIONS OF THE EYES.—HERN, J., Edinburgh (*Brit. Med. Jour.*, Aug. 25, 1905).

The writer calls attention to the existence of the following affections in connection with the presence of adenoids and other abnormalities of the nasopharynx: (1) Phlyctenular conjunctivitis (the most common); (2) the so-called weak ulcer of the cornea; (3) eczematous keritis (often called phlyctenular kerato-conjunctivitis; (4) a peculiar irritability or hypersensitiveness of the retina, so that in the absence of the normal causes of photophobia there is difficulty in opening the eye in a bright light.

He thinks there can be no reasonable doubt that the ophthalmic conditions are secondary to the nasopharyngeal and depend both on lowering of the general health and actual extension of the inflammatory process up the nasal duct to the eye. C. H. M.

EYE AFFECTIONS CAUSED BY NASAL DISEASES.—PAUNZ, Budapest (*Arch. f. Augenheilk.*, lii, B. 4), states that relationship may exist in the following ways: 1. Through direct extension. 2. By way of the blood and lymph passages. 3. Of reflex origin. He records instances of dacriocystitis having their origin in atrophic rhinitis, antrum disease with polyps, subacute catarrh, and hypertrophied turbinates; also a case of orbital infection from frontal sinusitis. He says that it must not be forgotten that, aside from infection of the orbit from antrum disease occasioned by carious teeth, this may be brought about by extension outwardly along the periosteum of the superior maxillary bone without the antrum being at all affected. He records a case of transitory paresis of the levator palpebrarum superioris caused by frontal sinusitis and a questionable instance of paresis of the superior oblique caused by hypertrophy of the turbinates, and a very interesting instance of intracanalicular inflammation of the optic nerve in which there was a papillitis with vision reduced to 1/10 with a paracentral scotoma almost circular, but broken below. Pressure upon the lamina papyracea caused intense pain. Operation revealed inflammation of the posterior ethmoidal cells with a cavity as large as a hazelnut lined with polypoid mucous membrane. Three months later the disc was pallid, with better defined margins and vision = 5/10. An instance of hyalitis associated with long-standing antrum inflammation caused by dental caries and the loss of an eye after cataract extraction from a latent inflammation of the antrum have also been observed by the author. W. Z.

AFFECTIONS OF THE EYE CAUSED BY AFFECTIONS OF THE NOSE.—M. PAUNZ (*Ungarische Medizinische Presse,* July 10, 1905). The tear-conducting organs, the orbit and the part of the optic nerve which lies in the optic canal are most apt to become involved by a nasal affection. With the exception of malignant ulcers of the cornea as a sequel of dacriocystitis, the transparent media of the eye are affected much more rarely by nasal causes.

The orbit of the eye becomes affected by extension of an inflammatory process in the nasal cavity; cystic dilatation of the accessory sinuses causes compression and narrowing of the lumen of the orbit. Orbital phlegmon is also usually of nasal origin.

The author relates certain cases where a chronic empyema of the frontal sinus caused inflammation of the orbit.

Disease of the frontal sinus may even affect the eye muscles; pus in the orbital sinus may cause an edema of the eye muscles, which is sometimes followed by paralysis.

An inflammatory process in the posterior ethmoidal cells or sphenoid sinus often causes an optic neuritis in the optic canal. Affections of the sphenoidal bone may also produce paralysis of the oculomotor, trochlear, and abducens nerves.

The uveal tract may also become affected by disease of the accessory sinuses. The author now cites a case where the cessation of purulent discharge of the antrum of Highmore improved the hyalitis which was also present and vision improved from 5/15 to 5/7; the vitreous also became more transparent. J. G.

RELATION EXISTING BETWEEN DISEASE OF THE ACCESSORY SINUSES AND INTRAOCULAR DISEASES.—FISH, New Orleans (*Arch. f. Augenheilk.*, lii, B. iii H.), gives the clinical histories of seven cases recently observed by him, from which he draws the following conclusions: 1. The clinical histories give no indication of possible origin from previous infection or general disease. The patients were strong, healthy individuals (only one had had a brief attack of rheumatic pain), and the true cause of the intraocular changes were in all cases plainly of a mechanical nature,—namely, the contracture or closure of the nasofrontal canal through congestion or inflammation.

2. The presence of accessory sinus inflammation, notwithstanding the absence of severe typical symptoms of the same.

3. The following is to be remarked as to the disturbance of pupillary reaction and accommodation: These disturbances, especially paresis of accommodation, are very frequently excited, especially is it an early and almost constant symptom in latent sinusitis. If the theory of passive hyperemia of the orbit is correct, this symptom naturally follows as the result of sympathetic involvement of the erectile tissue of the ciliary body.

In latent inflammation of the accessory sinuses following external closure, the initial symptoms appear in the eye and the patient seeks the oculist before he does the rhinologist.

The fact that in several cases exceptionally intense neuralgia of the trigeminus, so often present in iritis or intraocular inflammation, disappears at once upon drainage of the sinuses demonstrates that the pain is to be ascribed to sinus inflammation and not to the eye affection. It should, therefore, be borne in mind that in intraocular inflammations with exceptionally severe pain this symptom may be due to an overlooked inflammation of an accessory sinus.

It is to be observed in relation to the relative frequency of accessory sinus as a cause of intraocular inflammation that the author's seven cases of uveitis after frontal sinusitis were not culled out of a large number of cases, but that they occurred in the last eight cases of intraocular inflammation seen in private practice.

W. Z.

SYMPATHETIC OPHTHALMIA.

SYMPATHETIC OPHTHALMIA.—BRÜCKNER, Würzburg (*Arch. f. Augenheilk.*, lii, H. iv), has seen sympathetic ophthalmia occur in a case of linear wound of the cornea with incarceration of the iris. The symptoms came on ten years after the injury. There was a uveitis with a neuroretinitis. V. = finger counting at 3/4 m. Enucleation was performed. Inunction and K. I., together with subconjunctival injections of salt, were used. Eighteen months later V. = 6/4 pt. and the visual field was normal. The bright specks in the periphery of the fundus, described as chorioiditis sympathetica, were present. There were also brown-black pigment specks with a fine, red network. The latter, the author thinks, was the choriocapillaris showing through. W. Z.

REMARKS ON THE PAPER OF PROFESSOR MOTAIS, "THE TRANSMISSION OF SYMPATHETIC OPHTHALMIA THROUGH THE VENOUS CHANNELS."—WELT, Geneva (*L'Ophtalmologie Provinciale,* April, 1905). The subject is introduced by the statement that, although Mackenzie and Gifford had already spoken of the possibility of such transmission by the cranial vessels, the true merit of having called the attention of ophthalmologists to the probability really belongs to Motais, who gave as the route "the ophthalmic veins, receiving the blood from the orbit and the eye, terminating anteriorly in the angular veins and posteriorly in the cavernous sinus. The angular veins communicate with each other by the nasal arcade, and the cavernous sinuses communicate by way of the coronary and transverse occipital sinuses. Thus communication between the orbits and the ocular globes is permanently established by a complete venous circuit." Welt further states that, unfortunately, the confirmation of Motais' hypothesis encounters the same difficulties from the clinical, the bacteriologic and the anatomopathologic points of view as did those of Leber-Deutschmann, Berlin, and Schmidt-Rimpler, Without considering the clinical and bacteriologic difficulties, she proceeds to a consideration of the anatomopathologic. She mentions the three cases of sympathetic ophthalmia in which autopsy was made, viz.: that of Deutschmann, that of Pagenstecher, and that of Gruner, wherein the results of examination of the blood vessels were negative. She states that our researches in this line must be confined to such remains of vessels as cling to the enucleated eye, and that, moreover, we are limited to those which emerge from the posterior segment. She also says that such researches that were even made prior to the appearance of Motais' paper—as, for example, by Schirmer and by herself—demonstrated that the retrobulbar vessels of the excised exciting eye were normal. However, the desire expressed by Motais that these examinations should be conducted with greater care caused her to re-examine her microscopic preparations, consisting of one sympathizing eye, eleven exciting eyes, and two with traumatic iridocyclitis that were thought to menace their fellows. The alterations discovered were of three kinds: First, masses of mononuclear round cells situated around the retrobulbar vessels; second, the presence of polynuclear cells in numbers that were much greater than normal in the vessels, and, third, changes in the walls of the vessels. The writer admits that the few lesions thus found are not sufficient to establish the Motais theory, but she believes that they suffice to warn authors to re-examine their preparations and in the future to note with care the condition of the extrabulbar vessels. C. H. B.

SYMPATHETIC INFLAMMATION FOLLOWING PANOPHTHALMITIS.—ZENTMAYER, WILLIAM, Philadelphia (*Jour. A. M. A.*, Aug. 19, 1905), concludes that:

1. While the occurrence is one of extreme rarity, eyes that present the clinical picture of panophthalmitis may excite sympathetic inflammation.

2. Such eyes, however, usually present microscopic changes analogous to those found in other exciting eyes.

3. With few exceptions in the cases in literature of sympathetic inflammation following phthisis bulbi, the eyes were of the class described by Fuchs as atrophied eyes.

4. Usually it is, clinically, the mild form of purulent uveitis which excites.

5. It is only after panophthalmitis of a virulent type that the resultant shrunken globe should be considered harmless.

7. That in some cases where the purulent panophthalmitis has been of a low grade, or where as a result of treatment the inflammation has not assumed a virulent type, the eye should be considered a dangerous one and should be enucleated.

7. That in some cases where the purulent panophthalmitis has been considered the exciting cause the original injury or disease may have been responsible.

8. Whether the histologic findings in most panophthalmitic eyes are to be considered the terminal stage of the inflammation or the evidence of a mixed infection is still undecided, but the evidence points strongly to the correctness of the latter assumption.

9. Several factors contribute to render panophthalmitic eyes innoxious. When the globe perforates many of the micro-organisms are extruded along with the pus, those retained within the globe becoming inactive through the enormous pus formation. This active pyogenesis, by blocking the posterior lymph spaces, serves to prevent migration of the toxic agents. Finally, the panophthalmitis may have been excited by organisms probably incapable of inducing sympathetic inflammation, such as staphylococci, streptococci and pneumococci. P. H. F.

TRACHOMA.

CONTAGION OF TRACHOMA.—POULARD, Paris (*Archives d'Ophtalmologie,* August, 1905). Poulard reports the history of a family consisting of a mother and four children, the youngest of the latter a baby of 3 months, infected with trachoma by the father. A mother and daughter living in the same house and frequenting their rooms were also infected. The medium was supposed to be the family towel.

The author states that there are still French ophthalmologists who doubt the contagion of trachoma, but does not favor us with their names. G. C. H.

WHAT IS TO BE EXPECTED FROM MEASURES OF THE GOVERNMENT AGAINST TRACHOMA?—GREEFF, Berlin (*Berl. Klin. Woch.,* 1905, No. 32, p. 999). For a series of years the Prussian government has been fighting against trachoma, which in eastern and western Prussia had spread to such an extent that not a sufficient number of young men could be enrolled in the army. Greeff expects, in opposition to others, great results from the measures adopted by the government and supports his view by the following points:

He shows that, on the Rhine, trachoma has evidently decreased within the last 20 to 30 years, and attributes this to the increased number of oculists. In western Prussia he found up to 80 per cent. of the Polish school children suffering from trachoma, while the Suabian colonies in that province are free from the disease. The reason is that the latter, from the time of their first settlement by Frederick the Great, have never intermingled with the Poles and live in a state of higher civilization and cleanliness. Thus the spreading of trachoma depends on the mode of life of the inhabitants, not on the soil or climate.

The supply of water, especially running water, is of the greatest importance. In eastern Prussia, where it is scarce, all members of the family wash not only in the same bowl, but even in the same water, so that if one has trachoma the others will be sure to acquire it.

Greeff advocates, as the best measures, the instruction of physicians, practicing in trachoma regions, in the diagnosis and treatment of trachoma and to encourage the settlement of oculists, with subvention by the government for the gratuitous treatment of the poor. C. Z.

Kuhnt's Enucleation of the Tarsus in the Treatment of Trachoma.—Boldt, J. (*Zeitschrift fuer Aug.*, 1905, xiv, p. 41). In the stage of degeneration of cicatricial trachoma, medicinal or mechanical treatment (by expression) being of no avail, the chief object is to remove the tarsus of the upper lid which, by its obstinate participation in the morbid process, has become a degenerated piece of tissue, a "caput mortuum," which can not be lifted (ptosis), by its shrinkage and curvature causes entropion, and, by its pressure on the cornea, acts detrimentally on the whole visual organ. For remedying these conditions Kuhnt devised, in 1894, his isolated enucleation of the tarsus, the description of which is here quoted. No evil results have ever been observed, and Boldt shows its cosmetic and beneficial effects, enabling the patients to work again, being far superior to the excisions of the retrotarsal fold by Heisrath.

C. Z.

Electrical Treatment of Trachoma.—Harman, N. Bishop. London (*Brit. Med. Jour.*, Aug. 26, 1905). The writer gives the results of electrical treatment of trachoma at the Middlesex Hospital. Cases had been treated with the well-equipped apparatus the hospital possessed with both x-rays, high-frequency currents, and radium. With regard to the x-rays, he explains that there were two sets of rays emanating from the tube: (1) The x-rays proper, and (2) the overflow rays that cause the severe burning of the skin which sometimes occurred; the former of these rays were used. Four cases of trachoma were treated in this manner. Two were young women. In one fifty settings were made in five months. The right eye showed changes that might reasonably have been produced in this time without treatment, while the left, which was at first unaffected, steadily got bad. The disease subsequently cleared up in the usual manner with bluestone. None of the three other cases did any better. The seven cases treated with high-frequency currents did not improve at all. Of two cases treated with radium, one girl had 139 applications between April and October, 1904, but during this time no change for the better could be detected. In another case of the mixed type of trachoma, the patient had 37 applications. No change for the better could be detected, but the case got rather worse under treatment. C. H. M.

TUMORS.

Plexiform Neuroma of the Eyelid.—Scimemi, E. (*Annali di Ottalmologia*, 1905, pages 329-360), has observed 3 cases of plexiform neuroma of the eyelids, and describes the details. He has found records of 39 cases of plexiform neuroma of the upper lid in literature, which he reviews and tabulates. The personal case described at length was a true congenital neuroma, involving the left upper eyelid of a girl of 13, who exhibited defective development of the outer margin of the orbit, with exaggerated development of the external genitals and stenosis of the ostium of the vagina. On palpation the tumor gave an impression of being formed of cords and knots. On anatomic examination it was found to be composed of strands of connective tissue; as a rule, they run in a direction parallel to the fibers of the orbicularis. Most of these cords showed in the center a bundle of nerve fibers. C. A. W.

Angio-Sarcoma of the Upper Eyelid.—Blok, D. J. (*Tijdschr. v. Geneesk.*, Jan. 21, 1905), demonstrated a section of a pea-sized angio-sarcoma of the upper lid, which developed directly after removal of a pin-sized sebaceous cyst of the margin of that eyelid in a 15-year-old boy. After excision the wound was cauterized, and patient cured until report (three-fourths of a year).

He mentions also that he removed an eye for small-celled sarcoma in a 25-year-old woman, and had no return after 3 years.

Koster saw a small polypus, which he removed with the scissors from the conjunctival sac of a 2-year-old boy, return quickly. After extirpation this proved to be an angiosarcoma. Quick reappearance with affection of the bulb, so that the bulb was extirpated. Three months later extensive return in the orbit. Exenteratio of the orbit was of no avail. The child died from metastasis in the brain.

Nicolai doubts if one can speak here of return.

Faber saw, 12 years after removal of a pigmented sarcoma from a 30-year-old man, a general sarcomatosis.

Blok thinks we can not speak of return after 12 years, as we can not know when the general sarcomatosis began. E. E. B.

Angioma of the Conjunctiva.—Carlini (*Annali di Ottalmologia,* xxxiv, 5-6, 1905). A patient, 5 years old, had a small elevation on the external third of the upper lid like that produced by chalazion. On everting the lid a tumor the size of a pea was seen attached to the conjunctiva by a short pedicle. The color was brown-red. A diagnosis of polyp was made and the tumor removed. Profuse hemorrhage was finally controlled by prolonged pressure and instillations of adrenalin. Histologically the section showed loss of superficial epithelium and an investment of a fibrous layer in which were quantities of leucocytes. The mass of the tumor was made up of a reticulum formed of young connective tissue cells, elongated with an elliptical nucleus, between which were a number of clear spaces covered with endothelium and representing blood vessels and lacunæ. The vessels had an embryonic character and contained a few blood cells. The extraordinary large number of vessels brought out by eosin gave the appearance of a sponge. The tumor was composed of vascular elements associated with a limited development of young connective tissue. R. H. J.

A Case of Lymphosarcoma Primitive of the Orbital Lacrimal Gland, with Histologic Examination.—Gendron and Sewel, Lorient (*Archives d'Ophtalmologie*, September, 1905). The patient, a young man of 18 years, three months before he came under notice, observed a slight exophthalmos with diplopia. The exophthalmos had increased until the eye could not be completely closed by the lids, the movements of the ball were almost abolished, and a tumor could be felt extending from the external angle to the middle of the superior margin of the orbit. The tumor was removed by the Krönlein operation. It was found to extend to the bottom of the orbit. Six months later the patient died, as the author believes, of intracranial metastasis. The tumor was encapsulated and microscopic examination showed it to be a lymphosarcoma.

G. C. H.

Melanosarcoma of the Iris.—Poulard, Paris (*Archives d'Ophtalmologie,* September, 1905). A woman, aged 45, had a little tumor of the left eye occupying the upper part of the iris. This blackish tumor, darker than the iris, extended nearly to the center of the pupil. It developed slowly without causing any inflammatory reaction and reached the size of the lens. It was too large to be extracted by a corneal section and the eye was enucleated. Examination showed that it was a sarcoma, developed at the expense of the stroma of the iris. The posterior epithelium of the iris was nowhere involved. The neoplasm developed in the forward direction and was composed of fusiform and pigmentary cells. Fusiform cells were found in the ciliary region, which showed that it would not have been safe to remove the tumor by an iridectomy. Poulard considers melanosarcoma of the iris rare. G. C. H.

MULTIPLE MUCOFIBROMATA OF THE PALPEBRAL CONJUNCTIVA.—COSMETTATOS (*La Clinique Ophtalmologique,* Oct. 25, 1905). The author states that this variety of tumors is designated polypoid. Billroth first made the distinction between the mucofibroid growths and the polypoids. The exact designation of fibroma from an anatomico-pathologic point of view by Elschnig was arrived at after an histologic study. And Cosmettatos confirms that view after microscopic study. He details a case. B. E. F.

ON PINGUECULA AND PTERYGIUM.—ALT, ADOLF, St. Louis, Mo. (*Amer. Jour. of Ophthal.,* September, 1905). The writer discusses the views of Arlt, Horner, Fuchs, Sgrosso and Huebner on the nature of pinguecula and the relationship between this condition and pterygium. According to all descriptions, the tissue of the full-grown pterygium is that of conjunctiva. In collecting material for his studies, Alt has obtained specimens of beginning pterygia, and from an examination of these he has become convinced that a pinguecula is, as a rule, the origin of a pterygium, although once in a while the latter may result from a peripheral corneal ulcer in the way explained by Arlt.

As regards pinguecula, the results of the writer's more recent examinations agree with those of previous investigations, but it would be incorrect to claim special prominence for any of the different degenerative processes described. In most cases the epithelium is of normal thickness, in some it is atrophied, in others hypertrophied; goblet cells were not found to be a very striking feature. Hyaline degeneration of the conjunctival tissue is always present and also concretions representing deposits of free hyalin; underneath this hyaline tissue is one which appears granular and is formed of elastic fibers.

"It seems to me that the connection between pinguecula and pterygium is no longer as mysterious as it used to be, and we may assume it as certain that in most cases a pinguecula has been the first step to the formation of a pterygium, which does not by any means say that every pinguecula must form a pterygium. Given the necessary conditions, the presence of a pinguecula leads to a slow inflammatory process in the conjunctival tissue which separates it from the corneo-scleral margin, with new formation of tissue. This newly formed tissue, preceded by some small blood vessels, grows into the cornea between epithelium and parenchyma in the place of Bowman's membrane, which is destroyed in advance of the oncoming head of the pterygium by an army of leucocytes. The newly formed tissue drags the pinguecula, and the conjunctiva on the other side of it, along in its growth toward the center of the cornea, and the characteristic tissue of the pinguecula is gradually lost."

The writer describes a simple operation for pterygium which he prefers to all others: "Having removed the apex of the pterygium as cleanly as possible from the cornea and excised a rhomboid piece of conjunctiva in the well-known old fashion, I make a free cut through the conjunctiva at the limbus upward and downward so as to relax this membrane perfectly. I know that Dr. Savage describes these cuts in his operation, but I have made them years before his publication, and did not think that I was the only one to whom the value of such relaxing incisions had occurred. After this I cauterize, especially the corneal wound, vigorously with pure carbolic acid, apply no sutures and close the eye. In several hundred cases of pterygium thus operated upon I have met with very few relapses."

C. H. M.

Angiomata of the Conjunctiva.—Carlini, V. (*Annali di Ottalmologia,* 1905, pages 396-407), describes the case of a lad of 5 who had a tumor as large as a nut, reddish brown in color, attached by a pedicle to the outer third of the tarsal conjunctiva of the right eye at about the proximal margin of the tarsus. The child had exhibited, three years before, a small angioma on the brow, which had not recurred after removal. The small palpebral tumor bled freely whenever the child rubbed his eye. It was cut away, but began to grow again in five days, and by the end of two weeks was as large as it had been before. There was considerable hemorrhage from it one night, and in the attempts to arrest the bleeding the tumor was pulled off. Ten days later a new tumor had grown in the same spot. It was excised and submitted to histologic examination with the primary tumor. The new growth seemed to be constituted of a delicate framework of connective spindle-shaped elements, with innumerable blood vessels, all exhibiting an embryonal character. There was no trace of mature connective tissue. These facts do not harmonize with our previous conceptions of angioma of the conjunctiva, which we know as a tumor generally located in the bulbar portion of the mucosa, which grows very slowly and does not induce hemorrhage nor recur after removal. He concludes with a discussion of the differentiation of angioma from mucous polyp, granuloma, highly vascularized papilloma and fibroma, stating that the tumor in the case described was evidently a true conjunctival angioma. He adds it as such to the 16 already recorded in ophthalmic literature. C. A. W.

On Epibulbar Leucosarcoma.—Cosmettatos, G. F., Athen (*Klin. Mon. fuer Aug.*, 1905, ii, p. 273). Epibulbar leucosarcoma is much rarer than epibulbar melanosarcoma. It generally develops at the limbus or in the conjunctiva and has the tendency to spread over the surface, rarely upon the cornea, and does not penetrate into the eyeball. Cosmettatos' case occurred in a girl, aged 14 years, after an injury of the right eye by the point of a branch of an oil tree entering the conjunctiva above the sclerocorneal junction, causing a slight ecchymosis. The tumor grew over the limbus and 4 mm. of the upper lateral corneal quadrant. It was triangular, reddish, smooth, but never bled. During removal it showed no intimate connection with sclerotic or cornea, but with the conjunctiva. It was a round-celled leucosarcoma, 8 mm. long, 4 mm. wide, 2½ mm. thick, the cells being in direct contact with the epithelium, from which they were separated through a hyaline membrane.

The case showed that the origin of pigment in melanosarcoma, and sometimes observed in leucosarcoma, can not lie in the disintegration of red blood corpuscles, since the tumor contained no pigment, although it developed after traumatism and was abundantly vascularized. C. Z.

Primary Epithelioma of the Cornea.—Brady, George T., San Francisco (*Ophthalmic Record,* September, 1905). J. C., aged 42, developed a neoplasm in an uninjured cornea, without any evidence that it had ever involved the limbic area. No hereditary influence. Growth active for three years. On the temporal half of cornea of right eye is seen a broad, irregularly, hour-glass-shaped grayish-white, rugose, sessile mass elevated 0.5 = 0.75 mm. Everywhere surrounded by clear cornea. No ocular inflammation. Vision 20/50. Microscopic examination shows the growth to be a papillary epithelioma. M. B.

Primary Carcinoma of the Cornea.—Gasparrini, E. (*Annali di Ottalmologia,* 1905, pages 91-101), remarks on the rarity of carcinoma primarily originating in the cornea, and reviews the scanty literature on the subject. He had encountered a case in his own practice. The patient was a man of 52, and the tumor was first noticed in the lower half of the cornea, about 2 mm. from the outer margin. The epithelial nature of the growth was determined by histologic examination of a piece cut from the tumor. The growth was so extensive that it filled the entire pupil region of the cornea and invaded part of the bulbar conjunctiva. After enucleation of the eyeball, sections of the new growth showed a typical epithelioma, with the characteristic epithelial pearls which had at some points invaded the true cornea tissue. C. A. W.

A Case of Rapidly Growing Serous Traumatic Cyst of the Iris.—Blaschek, Albert (From the clinic of Prof. F. Dimmer in the University of Graz. *Zeitschrift fuer Augenh.*, 1905, xiii, p. 804). A man, aged 43, developed, within 3 weeks after perforation of the cornea by a foreign body, probably iron, a cyst lying against the posterior surface of the cornea, 6 mm. long in the vertical meridian and occupying 3/5 of the periphery of the cornea. It was translucent, and on its surface were blood vessels and stripes of pigment. There was a keratitis starting from the posterior surface. Vision = 0.5. The cyst was removed by iridectomy through a section on the lower limbus with von Graefe's knife. Its wall consisted of iris tissue. It seems that the cyst developed from implantation of epithelium into the interior of the globe, not directly by the traumatism, but by the epithelium which develops in the wound canal growing toward the surface of the iris. Blaschek discusses the different forms of cysts of the iris and their modes of development. C. Z.

Concerning Melanoma of the Chorioid, with the Report of One Case of This Character and of a Pigmented Sarcoma of the Chorioid Early in Its Development.—De Schweinitz, G. E., and Shumway, E. A., Philadelphia (*Ophthalmic Record*, July, 1905). Illustrated. In order to show that sarcoma may develop from pigmented nevi, reference is made to the work of Virchow, Unna, Kromayer, Ziegler, Panas, Leber, Wintersteiner, Hirschberg, Wood and Pusey, Hulke, Maetens, Purtscher, Fuchs and Derby.

Case 1.—Fibrosarcoma of the inferior and superior parietal convolutions; optic neuritis; melanoma (pigmented nevus) of the left chorioid. Colored woman, aged 32. First seen in October, 1901. Family history negative. Some months previous to admission to the hospital, she began to lose power in her right leg and to suffer from headache. Right arm became paretic about a month before she was admitted. Upon admission right side of face was paretic. Speech a little slow at times, no aphasia. Right arm and right leg paretic. Examination of eyes by Dr. de Schweinitz on October 23 was that external aspect was normal. Vision in each 5/25, without correction. Pupils normal. No ocular pareses. Marked bilateral optic neuritis (choked disc), with flame-shaped hemorrhages. Visual fields show typical right homonymous hemianopsia. Color fields could not be satisfactorily obtained. An operation designed to expose the brain tumor was performed by Dr. W. J. Hern and Dr. J. C. Da Costa, and the larger part of the tumor removed. The patient died, and at the autopsy the following conditions were found: Calcareous endocarditis; chronic interstitial nephritis; and congestion and emphysema of the lungs. This tumor chiefly involved the white matter of the superior and inferior parietal convolutions and the middle portion of the postcentral convolutions. It proved to be a fibrosarcoma. The posterior half of each eyeball was removed and, after hardening in formalin, submitted to examination. *Microscopic examination.*—There is a high-grade swelling of the nerve-head. Chorioid is very densely pigmented throughout, the cells being almost solid, with very black pigment. At one point, 3 mm. from the nerve entrance, there is a special thickening of the chorioid which is plainly visible to the naked eye. Measured carefully with a micrometer eyepiece, its long diameter is 1.2 mm. and its greatest width 0.5 mm. There is no evidence of any inflammatory reaction at this point. This thickening of the chorioid is made up of closely massed pigment cells, of the usual type of chorioidal stroma cells. The ferrocyanid-hydrochloric acid test for iron revealed an interesting condition. The majority of the cells did not stain, but at each end of the growth in exactly the same position a group of the pigmented cells stained a deep blue color where they tapered off into the normal chorioid. In the absence of evidences of inflammation, past or present, it seems proper to consider this chorioidal thickening as a *melanoma of the chorioid,* in an eye with great increase of the pigment throughout the uveal tract as far as the sections reach.

Case 2.—Endothelioma of the dura mater; optic neuritis; melanosarcoma of the chorioid at a very early stage of its development. white, aged 47, was admitted to the hospital in April, 1899. Sixteen years before he sustained an injury in the fronto-parietal region by striking his head against a joist. This injury is supposed to have some causative influence upon the development of the brain tumor, which gave more or less evidence of its existence by gradual increase of local and general symptoms until finally in April, 1899, a craneotomy was performed by Dr. Stern. A large, inoperable tumor was found and no attempt was made to remove it. Death occurred in three hours. At the autopsy a large depressed area was found in the skull, with exostoses on the inner surface of the bone, and a large tumor of the dura mater which proved to be an endothelioma. The posterior half of each eye was removed and prepared for microscopic examination. This examination showed the presence of choked disc in each eye. At a point 5 mm. from the center of the optic nerve there is a pigmented thickening of the chorioid. This area measures 4.4 mm. in its antero-posterior diameter and 0.9 mm. in thickness. Microscopically it is evident that this growth is a melanotic sarcoma of the chorioid in the very earliest stage of development. At the periphery of the growth, at each end, there are a few pigmented cells which give a decided iron reaction, but nowhere else in the growth do any of the cells take the characteristic blue stain. The two cases have in common the marked pigmentation of the chorioid and of the inner layers of the sclera. The chorio-capillaris in each case was not invaded and took no part in the formation of the thickening. The positive iron reaction is exactly in the same position in the sections from both cases, in the extreme periphery, where the cells are developing most rapidly. M. B.

Bilateral Metastatic Carcinoma, with Bilateral Detachment of the Retina and Subsequent Replacement of the Retina in the Right Eye.—Oellers, Erlangen (*Arch. f. Augenheilk.*, lii, Nos. i and ii). The patient, a female, aged 47 years, was first seen in November, 1899, at which time she was totally blind, this condition being of 8 days' duration in the right eye and of 2 days in the left. She had been nearsighted since youth. Four years previously the right breast had been amputated because of a growth. The anterior segment of the eye presented no anomaly and T. was normal. There was neither disturbance of motility nor protrusion of the globe. Subconjunctival injections of salt and scleral punctures were unavailing. Later Deutschmann's incision was made, 3 times in the right and twice in the left eye. The patient was discharged Jan. 17, 1900, with hand movements in the right eye. Two months later she was able to read the paper with this eye. Her sister stated that the eye became blind in June. The patient died in July. The postmortem showed: In the apex of the right lung a cancerous node and in the pleura over the upper and lower lobes drop-like cancerous growths. In the upper lobe of the right lung there were isolated gray-white nodes and in the pleura of the lower lobe several flat, drop-like collections. There were cancerous nodes in the spleen. The inner surface of the dura mater showed several gray neoplastic growths. There were gray growths in the left half of the lateral sinuses. There was a large tumor between and extending into the occipital lobes. The firm growth was sharply defined and the larger part of the occipital lobes was destroyed. Both eyes were removed. Macroscopic examination of the right eye showed enormous thickening of the uveal tract, with the exception of the iris. The chorioid, which at the optic nerve appeared to be formed with the ciliary body a fairly uniform cup, measuring from 1 to 2 mm. in thickness. The inner superficial surface of the chorioid seemed to be in shallow folds. The ciliary body showed marked nodular thickening. The inner boundaries are rounded and the ciliary processes are invisible. The thickening of the ciliary body ends sharply at the root of the iris. The cut surface of the cup-shaped tumor is uniformly bright grayish-yellow, only here and there a greatly thickened vessel appearing as a dark point. The papilla is considerably swollen. The retina lies against the chorioid throughout, except for a few folds. The vitreous chamber is filled with a gray mass. Nasalward reaching from the equator to the dural sheath lies a tumor firmly united with the sclera 5 mm. in thickness. Templeward there is an episcleral tumor of the same extent, but only 1 mm. thick. This has the same consistency and color as the chorioidal tumor. Nasalwards no connection can be made out between the extra- and intraocular growths, but templeward such a connection is apparent at the position of the posterior ciliary nerves and vessels. In the left eye the most striking appearance is the enormous cup-like thickening of the chorioid (2.5 mm.). Whereas in the right eye the chorioid increases in size toward the ciliary body, in the left eye it grows thinner in this direction. The ciliary body forms a triangular cone. The retina is completely detached; the cone thus formed is filled with a black clot which has come from the chorioid. No epibulbar extension of the growth is visible. The chorioid in its entire extent, with the exception of the chorio-capillaries and in part the layer of transitional vessels, have departed from their normal structure. The pigment stroma cells have entirely disappeared. The stroma is made up of strands of connective tissue cells, with marked variation in the degree of development. Frequently in these parallel running veins there were, besides the round and oval, often very large intercommunicating spaces. These branching spaces are filled with an enormous number of cells, the majority of which are typical epitheloid, with large nuclei and scant protoplasm. Ordinary round cells are relatively scant in number mingled with the epitheloid cells. Sections of these conglomerate cells show round or oval cell nests within the alveoli. Many neighboring alveoli are filled with homogenous or granular detritus. These portions often show mucoid or colloid degenerated tumor cells. Blood vessels are present only in a scant number in the middle and posterior portions. The chorio-capillaries are for the most part surprisingly well retained. The layer of transitional vessels is in places discernible. The lamina vitrea is in great extent well preserved. The previously described alveola structure extends symmetrically into the ciliary body, stopping short at the root of the iris. Within the ciliary body the epitheloid cells contain a large number of smaller cells, with round or oval nuclei similar to those of round cells. The retrolamina portion of the optic nerve shows the characteristic changes of a mild interstitial neuritis. The papilla was markedly edematously swollen between the point of perforation of the chorioidal tumor and the beginning of the granular layer, and in places between these there are typical cancer cells having no demonstrable connection with the chorioid. The microscopic examination showed likewise that, for the most part, the retina was in contact with the chorioid. The changes throughout the membrane were insignificant. The rods and cones and the pigment epithelium are either entirely destroyed or degenerated or metamorphosed. Originating from the previously existing subretinal effusion there was a layer which stained red with eosin. In places it was entirely absent so that the external limiting membrane rested immediately upon the lamina vitrea or upon one of the superimposed connective tissue new formations. Its average width was that of the stratum granulosam; in other places where the retina was in folds it filled out this space. Various cellular elements were incarcerated in this homogenous membrane. These were scant in the innermost portions, but in places groups of round granules rested immediately upon the external granular layer. The retinal epithelium presented no connection with the lamina vitrea. Only at the ora serrata did it again present a continuous pigment layer. In great numbers of specimens no normal epithelium can be found, and in a fewer number it is entirely wanting or there are a few scattered cells or rows of cells with round or oval, weakly or intensely staining, large nuclei, often with included pigment molecules. Lying upon the lamina vitrea there are in places large pigment spindle cells either in single or multiple rows. The nuclei of these cells are often entirely hidden by pigment or they appear round or oval. Free pigment is also found upon the lamina vitrea. A further peculiar finding is the delicate fibers and the thick connective tissue strands. The fibers are mostly very long and stretched meridionally. They present an oval or spindle-formed, necrotic, often intensely stained nucleus. The nucleus is often of enormous length and then very narrow and difficult to discern. Close to the nucleus there is often found a single pigment granule. These fibers pass either singly or in groups through the transudate.

The interesting point in the case was the location of a metastatic growth in the right eye. That a tumor of the chorioid should produce a detachment of the retina is to be expected, but that such a retina should become reattached through further growth of the tumor is an astonishing fact. The microscopic study of this condition in the above case is a valuable contribution to the study of detached retinæ. W. Z.

PERIOSTEAL, MELANOTIC ENDOTHELIOMA OF THE ORBIT.—BINDI (*Annali di Ottalmologia,* Year xxxiv, Nos. 7-8, 1905). A patient, 39 years old, had great pain and diminished vision in the left eye. Soon afterward the eye began to project and the lids and conjunctiva became edematous. Palpation revealed 2 elastic nodular masses. Vision was diminished to such an extent that fingers could be counted only at 15 cm. Under chloroform narcosis the tumor was removed. The microscopic examination showed a tumor of connective tissue type made up of round and polynuclear elements distributed around cavities containing red corpuscles and circumscribed by walls formed of loose connective tissue. In the mass of the tumor were numerous vascular cavities. The tumor was derived from the periosteum. R. H. J.

ENDOTHELIOMA OF THE OPTIC NERVE.—SANTUCCI. (*Annali Di Oltalmologia,* xxxiv, 7-8, 1905). In a boy, 6 years old, there was exophthalmos, deviation of the eye externally and loss of sight. There was some pain on pressure. The ophthalmoscope revealed symptoms of a papillitis. A modified Krönlein's operation was done for the removal of the neoplasm, a portion of the optic nerve being excised with the tumor.

Histologic Examination.—The mass had the shape of an olive and extended along the nerve from the optic foramen to the eyeball. The greatest diameter of the tumor was one centimeter and a half. The dural sheath was thickened about ten times its normal size. In structure it was made up of 2 layers of connective tissue which were situated one obliquely to the other. The fibers were thickened, in some places disintegrated and infiltrated with small cells. The vessels traversing the dura had thickened and infiltrated walls, some were filled with blood, most of them were empty. In the thickest part of the dura there was a degeneration in a compact, fibrous tissue. The peridural connective tissue presented in many places centers of infiltration especially around the vessels.

Arachnoid.—The two endothelial layers and the space between presented interesting changes. The dural layer was reduced to a narrow string covered by flat endothelial cells disintegrated by the diffusion between them of cells pertaining to the tumor mass, while the layer covering the pia showed a true epithelial proliferation. In this latter layer and in the pia was the origin of the tumor, which, in its development, had followed two paths, a centrifugal, occupying all the arachnoid space, and a centripetal, destroying the fibers of the pia and invading the mass of the nerve.

The tumor mass surrounded the optic nerve like a ring with a development on one side of 5 mm., on the other of 1 mm. The growth was made up of nucleated endothelial cell elements, compact, occupying all the arachnoid space. These elements were surrounded by connective tissue fibers. The alveolar nature of the tumor was clear. The cell elements were endothelial in character. They were more distinct as elongated, endothelial elements next to the pia endothelium and assumed a rounded form toward the center of the mass. The pial layer showed thickening, the connective tissue toward the arachnoid was disintegrated, and the endothelial cells covering the surface were enlarged and compact, assuming an elongated shape. At this point the origin and development of the tumor could be observed. The optic nerve near the bulbus was invaded by the tumor mass and had assumed an enormous volume. This caused stasis in the vessels of the papilla. The septa of the connective tissue in the nerve were surrounded by endothelial cells.

R. H. J.

TUMOR AND ABSCESSUS ORBITÆ.—SNELLEN (*Tydschr. v. Geneesk.,* Jan. 21, 1905), shows specimens of tumor orbitæ and abscessus orbitæ, and speaks about the difficulties of differential diagnosis between both affections. Inflammatory symptoms may fail with abscess even when inflammation of the bony orbital wall is the cause; even protrusio bulbi may be absent. In one patient he saw protrusio bulbi and severe inflammatory symptoms: punction did not give pus nor demonstrate clearly a tumor, only infiltrated tissue which showed nothing characteristic under the microscope. Still he believed he had to deal with a diffuse tumor, because headache pre-existed. After exenteratio of the orbit the headache remained, even increased, and under cerebral symptoms the patient died. The total duration was 14 days. An intracranial tumor, small-celled sarcoma, was found of the size of a child's fist in the frontal lobe. A third patient showed suddenly chemosis, vomiting, pain in the eye, redness around the eye and protrusio bulbi. Incision evacuated much pus. Notwithstanding he performed exenteratio orbitæ and found a tumor around the bulb. Van Moll had once found a small protrusion of the bulb, with pain and redness of the upper lid, which came on in a few days. Increase of the protrusion, no fluctuation, no pus after incision. Exenteration was refused and the child died from meningitis through extension of the tumor in the brain.

Struycken saw a patient with an acute abscessus orbitæ starting from the frontal sinus, going around the optic nerve and perforating at the temporal side of the eye. E. E. B.

CYLINDROMA OF THE ORBIT AND LIDS, WITH REPORT OF CASES.—WEEKS, JOHN E., New York (*Jour. A. M. A.*, Sept. 30, 1905), states that this neoplasm is characterized by the formation of hyaline cylinders, tubules, and lobulated masses, as a result of a degenerative process, the hyaline tissue composing a relatively large portion of the tumor. He gives the various names applied to this condition and the views of some authorities as to its nature. It occurs most frequently in connection with the salivary and lacrimal gland. He carefully reports a case in which thorough removal of the tumor was followed by recurrence, demanding exenteration of the orbit and minutely describes the growth histologically. After reporting a second case, he describes the general nature of the orbital growths, with hyaline degeneration. They sometimes develop myxomatous tissue, cartilage and true bone, which stamps the growth, so far as the stroma is concerned, as mesoblastic in origin. However, he has been unable to find any reports of a case from which epithelial tissue could be entirely eliminated, but, since the peculiar hyaline change that takes place in mesoblastic formations in these growths is so striking a feature, he believes, with Verhoeff, that the term cylindroma should be retained. He considers that they are not so malignant as ordinary sarcoma and carcinoma, but require most thorough removal, and if osseous structures are involved they should also be removed. M. D. S.

DIFFERENTIAL DIAGNOSIS OF INTRAORBITAL TUMORS.—TIFFANY, FLAVEL B., Kansas City, Mo. (*Jour. A. M. A.*, Sept. 30, 1905), calls attention to the importance of diagnosis, and names, describes and gives the origin of the different varieties of tumors found in the orbit. He describes the characteristics of the malignant and benign forms and calls attention to one symptom common to all forms, excepting a luxated lacrimal gland—namely, proptosis. The different directions of this exophthalmia locate the seat of the tumor. If on palpation the tumor is found to be hard and immobile, it is of an osseous nature, especially if of slow development. If soft and fluctuation can be detected, it may be of a serous, phlegmonic or sanguinous nature. If soft or yielding without fluctuation or pulsation, it may be fatty, as a lipoma; or if soft and less yielding without fluctuation it may be fibroid or glandular, as an adenoma. If it is vascular, as an angioma, nevus or aneurism, there will exist pulsation and bruit, especially if the patient takes the stooping position, with the head hanging low. In the pulsating varieties, the upper lid is swollen and tense, with an elevation of temperature, both lids frequently being everted. There is a continuous soughing or murmuring and the bruit is of a continuous murmur. Pressure on the carotid will cause the pulsation and noises to cease. The ophthalmoscope often reveals a papillitis or atrophy of the optic nerve and venous or arterial pulsation. In angioma, in all cavernous tumors and in aneurisms, pressure on the tumor or eyeball is followed by recession of both eyeball and tumor, or in the horizontal position the eye will settle back into the orbit. He also gives a report of a case. M. D. S.

A Case of Cystic Sarcoma of the Orbit: Extirpation: Death.—Hansell, Howard F., Philadelphia. Illustrated. (*Ophthalmic Record,* July, 1905). The tumor undoubtedly had its origin in traumatism from a blow received on the left side of the head at the age of 5 years. One month after this blow the left eye began to bulge and the sight to be impaired, the globe became more and more pushed forward in the gradual growth of the tumor behind it until finally it only occupied a small portion in the anterior portion of the tumor, which, at the time the boy was seen by the author (18 years of age) was as large as a man's fist. The tumor was elastic and yielding to the touch in some places and in others it was hard and firm. It was not sensitive. A diagnosis of cystic sarcoma was made and its removal advised. Its extirpation was performed without accident. Hemorrhage was insignificant. The tumor was completely enveloped by capsule, except at the orifice of the optic canal, and sent no prolongations into the accessory cavities. The periosteum of the orbit was intact and not amalgamated with the capsule at any point. The orbital walls were thinned, particularly at the anterior margin. The orbit itself was increased enormously in size, measuring in its horizontal diameter 8 cm., or more than twice the normal. After enucleation of the tumor the cavity of the orbit was packed with iodoform gauze, the lids trimmed and sutured, leaving sufficient room for drainage. Convalescence was seriously interrupted by a prolonged attack of erysipelas contracted from a sporadic case that developed in the wards. He recovered sufficiently to return to his home in six weeks after the operation. According to the report of Dr. James, who attended the boy after he returned home, symptoms of meningitis appeared in a few days, and in three weeks the boy died. No postmortem was obtained.

The report from the pathologist, Dr. W. M. L. Choplin, was that the tumor was a large, ovoid, cyst-like mass, weighing 313 grams, and that the microscopic findings were that it is a cystic sarcoma.

M. B.

A CASE OF PRIMARY LYMPHOSARCOMA OF THE ORBITAL LACRIMAL GLAND.—GENDRON and SERVEL, Lorient. (*l'Ophtalmologie Provinciale,* August, 1905). In reporting this case to the French Ophthalmological Society, the authors state that, thus far, not more than ten cases of primary sarcomata of the lacrimal gland appear in literature, and but few of these have been accompanied by any details as to microscopic appearances. The case seen by them was that of a man of 18 years of age, who was first seen in July, 1904. The patient had been aware of diplopia, and "something wrong" in the right orbit for about five weeks' time. At no time was there any pain. Mercurial inunctions were prescribed. Two months later the patient returned with all the ocular symptoms accentuated. The tumor was removed by a modified Kroenlein operation. By December of the same year there was complete recovery.

About the middle of the following February, the patient began to suffer from insomnia and epistaxis. Pains in the head and lower maxilla appeared and became intense; these were referred more to the left side. There were not any symptoms in the limbs. There was but little vomiting. There was not any constipation, and there was no delirium. By March 3 of the same year, there were both dizziness and buzzing in the ears. There was moderate degree of fever. There was not any strabismus. There were no signs of recurrence of the tumor in the orbit. On the sixth of March (three days later), death took place. There was not any autopsy. Death was evidently produced from metastasis at the base of the brain.

The tumor of the gland was sharply circumscribed. It was the color of lees of wine, and was enclosed in a capsule. It measured 35x29x17 mm., and it weighed 9 grams.

The authors conclude that the neoplasm sprang from the inner face of the capsule normally enclosing the orbital lacrimal gland. During the process of growth the capsule was merely distended, save posteriorly, for a limited area, where the microscope demonstrated that there was a zone of invasion of the tumor-elements into the neighboring tissues. Apparently this was the route by which the growth had reached the base of the brain. C. H. B.

Plexiform Neuroma of the Lids.—Scimemi. (*Annali di Ottalmologia*, xxxiv. No. 5-6, 1905.) A patient, 13 years old, soon after birth, presented on the left upper lid near the external angle a small tumor, which gradually increased in size with the years until the lid was much larger than normal and limited in movements. At the first examination in 1892, the lid was enlarged, with the color of the skin normal. The swelling was continuous with the corresponding temple where the skin was loose. Since there was no pain to touch and the mass was nodular, a diagnosis of congenital fibroma was made. The operation had for its scope the removal of the swelling and the ptosis. Both objects were attained and after a time the lid appeared almost like its fellow on the opposite side, with the exception that upward motion was not quite as good. The patient married and went to America to live. At last accounts there had been no return of the growth. The histological examination showed fibrous cords of different shapes and sizes running in different directions through the entire thickness of the section separating muscle fibers. For demonstrating possible nerve elements with the topography and distribution of the same, Weigert's stain was used. Nerve fibers were found ramifying through the section. These fibers were usually of normal aspect—some presented evidences of degeneration. R. H. J.

VISION AND COLOR PERCEPTION.

Development of Vision After Operation in a Child Congenitally Blind from Cataract.—Scheffles, Crefeld (*Woch. f. Therap. u. Hyg. des Aug.*, No. 38, 1905). The child was 8 years of age when operated upon and was physically and mentally deficient. During the first years of life it suffered from rachitis and frequent tetanic attacks. Colors were most quickly learned; red was its favorite color. Three months after the operation the child was making very little spontaneous use of its new sense, but its interest gradually increased and its movements became freer. Notwithstanding that the fields seem full, it goes about as one with greatly contracted fields. Nystagmus continues. The case demonstrates that the congenitally blind from cataract should be operated upon early, as the lens is likely to shrink and become chalky and the development of the visual faculty be slow and tedious. W. Z.

The Marksman's Vision.—Bouchart, Limoges (*L'Ophtalmologie Provinciale*, July, 1905). The visual phenomena that are concerned in marksmanship, Bouchart says, have often arrested the attention of ophthalmologists from the point of view of ocular functioning, and of the physicist from that of optics. In both cases the problem has hitherto remained insoluble. The problem is this: Given three points, on a straight line, situated at different distances, how is it possible to obtain, with a dioptric system, a sharp image of these three points simultaneously on the same receptive membrane? The author says that its solution is placed wholly to the credit of Sulzer, of Paris, and is based upon the discoveries of experimental physiology and upon clinical investigation. Thus, in another instance, human and visual phenomena have defined explanations purely in accordance with mathematics and physics, to be elucidated only through the known workings of organic and living functions. The persistence of the luminous retinal impression afford the only key to the mystery. The three images are the rear sight, the front sight and the target; and each, when focused upon the retina by the act of accommodation, is there retained for a definite period of time (about six one-hundredths of a second). Before the disappearance of the first impression a second one must be produced; the same being true as to the second and third. The accommodative act in each instance, then, is accomplished in about two one-hundredths of a second. One can thus readily see how the least trouble of a ciliary apparatus at once lowers the quality of the holding marksman. However, asks the author, aside from this elasticity and this muscular rapidity (and this retention), may there not be a cerebral element which is engaged in the act?—one not of the entire cortex, but of its visual zones only? The development of a visual acuity which comes of a life situated in the open air is a cerebral phenomenon which has been obtained by the best utilization of luminous retinal impressions, and not one by any retinal function. It has been shown, with the aid of colors, the stereoscope, etc., after Parinaud, that sight is partly a function of the retina and partly one of the brain; and the share of each therein has been demonstrated. Sulzer has also shown how it is that the time which is necessary for the retina to send an impression to the brain augments with the distance of the object which has been aimed at; i. e., with the diminution of its apparent size; the image of the distant object being annihilated during the act of accommodation for the fixation objects which are situated near at hand. Charpentier has also shown the influence of the degree of illumination upon the persistence of the retinal image; and it is known that an illumination which is too intense is not favorable to good shooting, notwithstanding the contraction of the pupil which it produces.

C. H. B.

MONOCULAR STEREOSCOPIC VISION.—STRAUB, M. (*Zeitschr. f. psych. u. phys. d. Sinnesorgane,* Bd. 36), observed in his ophthalmoscopic course, some years ago, the papilla of the rabbit as beautifully as with the best binocular ophthalmoscope. He was demonstrating the differences of level in the fundus by the parallax. Although the differences of level in the human eye are less pronounced, a direct stereoscopic view with the parallax can be obtained after a little practice, the pupil being slightly dilated with mydrin, the light being good. Straub can demonstrate this true monocular stereoscopy also with the stroboscope provided with stereoscopic pictures. The stroboscope, called "Daedalium" by Horner, has a cylinder form with a diameter of 23 cm. Twelve vertical slits are at equal distances; at the inner side of the cylinder are bands of pasteboard with twelve figures also at equal distances. The observer looks with one eye through the slits of the turning cylinder, and if the similarity of the figures permits he receives one impression. The lines common to all figures show a small displacement in each succeeding image, but give the impression of a moving figure when the cylinder is turned. When black and white are seen at the same time in the stroboscope a sensation of luster is produced.

With the reversed image the parallactic displacement is well seen with + 13 D., and very good with + 10 D. As soon as the representation of a body is present the parallax is displaced and transposed to a different level by the mind. The same happens in daily life: the parallax remains unnoticed, because this sensation is directly used in perspective. With motion of the lens is first seen a motion of the different parts in the different planes; this motion is synchronous with the lens motion and reveals thereby its character of phantom motion. The observer sees a series of images, which move slowly past each other. A part of the lines of this image remain the same all the time, those lie in the plane impressed as steady. All points before or behind this plane make phantom-motions, larger when further away from the steady plane. Going out from the extreme positions of one oscillation of the lens, each point not in the steady plane will give two images, which may be called successive double images. These are interpreted with monocular vision as one more or less remote point. This is quite similar with binocular stereoscopy. Here we have double images existing at the same time, not observed in daily life, but only after consideration. Also here a physiological and psychic phase must be discerned. Physiologically double images are present. The mind, however, transposes the parallax in difference of level, and while joining every couple of points to one point, at the right place transforming the double vision into stereoscopic vision. For monocular stereoscopy the double images and the separate points lie in one retina; here we must allow the mind to draw conclusions from the retinal images. However, what must be conceded for the monocular stereoscopy must be available for the binocular stereoscopy.

E. E. B.

COLOR SYSTEM.—ELDRIDGE-GREEN, London. (*The Lancet*, Oct. 28, 1905). Eldridge-Green considered all the color systems of the past were elemental and showed how his non-elemental color system was developed. He assumed that light falling upon the eye liberated the visual purple from the rods and a photograph was formed. The decomposition of the visual purple by light chemically stimulated the ends of the cones, and a visual impulse was set up which was conveyed through the optic nerve fibers to the brain. The visual center was, therefore, acted upon by impulses caused by all rays of light and transmitted to the mind impressions of white light, and by it objects were seen monochromatically, as in a photograph. The color-perceiving center was concerned with the quality of the impulse within the power of perceiving differences possessed by that center of portions of that center. A color system was developed on this basis in the following way: It must be supposed that the visual center was first developed and then a color-perceiving center. When there were few cells in that center it would only be able to differentiate between the largest and the smallest wave lengths, the red and the violet—that is, the spectrum appeared nearly all gray, but with a tinge of red at one end and a tinge of violet at the other. As the color sense developed and more and more cells were added to the color-perceiving center it was not necessary that the rays of light should be so far apart before a difference was seen, and so the neutral band gradually diminished in size until the two colors met in the center of the spectrum. Then a third color, green, was developed, there being three main points of difference seen instead of two. Then a fourth color, yellow, was developed, its position being at the next point of difference—that is, midway between the red and green. The next color to be developed was blue and then orange. In some individuals evolution had proceeded farther and a seventh color was seen in the spectrum. He then showed how inconsistent the elemental theories were with definite facts of color blindness which were a necessary consequence of the above theory. C. H. M.

SUBJECTIVE VISION OF COLORED SPOTS IN THE VISUAL FIELD AS PATHOLOGICAL AND PHYSIOLOGICAL COLORED SENSATIONS.—HILBERT, R., Sensburg. (*Klin. Mon. f. Aug.*, 1905, xliii, I, p. 751.)

To the 15 cases from literature H. adds two of his own: I, a girl, aged 16, well nourished, constantly noticed for eight to ten days, in the course of influenza, an ill-defined, bluish-green spot of 1 cm. diameter in the center of the visual field of her right eye. Fundus and V. normal. Case II., a man, aged 53, sees with occasional short intermissions with his eyes open or closed, without any known cause, a scintillating, round, brown spot, 1 cm. in diameter, with pale-yellow outlines, 20° outward from the fixation point of his left eye. The condition is unchanged for about three weeks. He has moderate myopia V.=1.

This kind of subjective colored sensations is much rarer than genuine chromatopias occupying the whole visual field. Most of them probably have central causes, excepting those occurring in chorioiditis and other affections of the fundus. Treitel considers them as entoptic, representing the shadow of the opaque retina.

Hilbert observed such subjective sensations of colored spots also as physiological phenomena, in the dark, with eyes closed, or after the glare by snow, Koenig immediately before awakening with his eyes still closed.

If pathological they last longer, often for weeks, and have irregular configurations; the physiological show a regular geometrical arrangement and are transient. Both may be of different origin and importance. Whether these physiological subjective colored sensations arise in the periphery or center can not be easily determined. C. Z.

Some Observations on the Disturbances of the Sense of Color at the Retinal Center in Retrobulbar Neuritis.—Nagel, Prof. Willibald, Berlin. (*Klin. Mon. fuer Aug.*, 1905, xliii, I, p. 742.) Examined at the clinic of Professor Peters, Rostock, a girl, aged 15, with retrobulbar neuritis, probably the first symptom of multiple sclerosis, in pursuit of his researches to ascertain relations between congenital and acquired anomalies of color sensations. He concluded from his tests that to this case no color system could be applied which would be identical with the three dichromatic systems, protanopia, denteranopia, tritanopia. He reports another case in which three different diagnoses had been made at different clinics.

N. advocates careful examinations of more cases with better methods than perimetric tests. He considers color equations with spectral lights as the best. In cases in which a color (red, yellow, green, blue) is called gray, but without dichromasy, or in which one color is constantly designated by another (*e. g.,* green as blue, or *vice versa*), the principle of color equation ought to be employed; *i. e.,* to present simultaneously the objective different light with which a certain colored light is identified, with varying illumination. C. Z.

VISUAL FIELD.

A CASE OF CORTICAL HEMIANOPIA AFTER TRAUMATISM.—POSSEK, R., assistant. (From the eye clinic of Prof. F. Dimmer, in the University of Gratz, *Zeitschrift fuer Aug.,* 1905, xiii, p. 794,) A waiter, aged 23, received a blow with an ax on the occiput and lost consciousness for 15½ hours. After recovery, he saw double, both legs being paralyzed and anesthetic from a simultaneous injury of the vertebral column between fifth and sixth dorsal vertebræ. The left-sided hemianopia, with a sector of diminished eccentric vision in the defective half, which did not set in until the fractured piece of bone had been removed, was apparently due to pressure of an interdural hemorrhage caused by the operation. V. was 0.5, which is in discordance with former observations in which full central vision persisted. The case may be explained by the hypothesis of von Monakow-Bernheimer or that of Laqueur. Possibly a complete destruction of the greatest part of the right cortical visual sphere and a slighter lesion of the whole left occipital lobe could have taken place, not leaving one portion of them entirely free. On the other hand, the region representing the macula, found by Laqueur, may have been included in the damaged cortex. C. Z.

VITREOUS.

ON THE CURE OF SIDEROSIS BULBI.—CRAMER, E., Cottbus. (*Klin. Mon. f. Aug.,* 1905, xliii, I, p. 757.) In 1902 C. reported, in the *Klin. Monatsbl. f. A.* an apparently perfect cure of intense siderosis bulbi six weeks after extraction of the lens, which contained a piece of iron. A recent examination, however, proved the fallacy of this assumption. The eye was not irritated nor red, iris normal, pupil of medium size, reacted slightly to light, secondary cataract and vitreous transparent. The lower temporal portion of the retina was detached in shape of a fan. V. only uncertain projection.

This shows that the presence of iron in the globe, even at a remote seat from the retina, may, within three-quarters of a year, damage the elements of the retina to such an extent that degeneration and detachment may ensue years after removal of the foreign body. C. Z.

Book Reviews.

Skiascopy and Its Practical Application to the Study of Refraction.—Jackson, Edward, A.M., M.D. Fourth Edition. Revised and Enlarged, with 28 Illustrations. The Herrick Book and Stationery Company, Denver, Colo., 1905.

Nothing but commendation can be written about Jackson's work on Skiascopy. It has been brought thoroughly up to date, and its perusal will well repay those who are adepts in the art, and it is likewise a most reliable guide for the beginner. Even now there are many ophthalmologists who do not use skiascopy! By it the refraction may be most accurately and objectively estimated, independent of the patient's intelligence or acuteness, and it is a necessary part of the scientific measurement of the ocular refraction.

H. V. Würdemann.

The Eye, Its Refraction and Diseases.—Gibbons, Edward E., M.D. Diseases of and Operations upon the Eyeball and Its Adnexa. Volume II. The MacMillan Company, New York; MacMillan & Co., Ltd., London, 1905. Cloth, $5.00; Half Morocco, $6.50.

This is the continuation of Gibbons' work, in 632 well-printed pages of large type. The subject matter is well described, the treatment being rather conservative, the author stating that he has omitted some of the newer appliances and drugs because they have not proven of any special value or been in use long enough to speak authoritatively concerning them. Therefore, there are some omissions of methods and medicines now in vogue. The book is largely illustrated by the author's original drawings. Several interesting chapters are added which are not usually seen in treatises of diseases of the eye. One on Ophthalmic Migraine is very interesting, but the author certainly takes an extreme ground, for he says that the "correction of errors of refraction does not benefit migraine" (p. 559). He also states that "hemianopsia does not figure in hysteria, having never been seen due to hysteria" (p. 561), both of which statements may be controverted. The chapter on Associated Diseases of the Eye and Ear is new and interesting; that on Eye Lesions in General Diseases is of particular value. Both Volumes I and II are commended.

H. V. Würdemann.

The Artificial Eye (L'Oeil Artificiel).—Coulomb, Robert. With 27 Photographic Plates and 123 Figures in the text. J. B. Balliere et Fils, Paris, France.

This monograph of 152 pages is a most complete description of the subject. It gives historical and general considerations, describes materials used in the manufacture of artificial eyes, the utility and adaptation of the eye, the operations necessary for proper prothesis, the methods of wearing artificial eyes, inconveniences and diseases which are caused by their irritation and the cure of same, and plastic operations upon the orbit and lids. The book is beautifully written, printed and illustrated, and is of great interest to the oculist. H. V. WÜRDEMANN.

In the Year 1800.—KELLEY, SAMUEL WALTER, M.D. Being the Relation of Sundry Events Occurring in the Life of Dr. Jonathan Brush During that Year. Volume III of the Doctor's Recreation Series. MOULTON, CHARLES WELLS, General Editor. The Saalfield Publishing Company, Akron, Ohio, 1904.

This novel deals with the early days of the Republic, is written by a physician, and brings out many interesting phases of old-time life and practice. It is well printed and illustrated. It is delightful reading and will be appreciated by the physician when he wishes to read something aside from medical literature. The Doctor's Recreation Series are well bound and are an acquisition to any library. H. V. WÜRDEMANN.

The Ocular Remedies.—SNELLEN, JR., H. PROF. Utrecht. Graefe-Saemisch, Handbuch der gesamten Augenheilkunde. Second, Entirely New Edition. No. 100. 2 M., $0.50.

In the introduction the author states that only those remedies are considered which act locally on the eye, excluding general anesthetics and all internal medication, although frequently utilized in ophthalmology. Of this we can not approve, as, in our opinion, not the locality of application (not of "action," since we must assume also a local action of substances, introduced into the organism internally or subcutaneously), but the healing effect is the important point of discrimination. It seems to us that ignoring general treatment, of such paramount value, especially in intra-ocular and constitutional eye diseases, is a shortcoming in the otherwise admirable completeness of the great handbook. We hope that the editor will depart from the plan designated by Snellen and add a chapter on general remedies and modes of treatment employed in ophthalmology.

The local remedies are divided into antiseptics, astringents, relaxants, analgetics, mydriatics and miotics, and discussed according to their importance. Under nitrate of silver also, its recent substitutes are enumerated, but no mention is made of argyrol. Although adrenalin increases the action of some other drugs, e. g., cocain, it has no therapeutic value, as it removes only symptoms and perhaps often prevents useful reactions. But the value of dionin as a lymphagogue is strongly emphasized. For longer use and in inflammatory conditions, atropin is still the best mydriatic. Eumydrin is less poisonous and, therefore, more valuable in the treatment of old people and children and in idiosyncrasy for atropin. Bromate of methylathropinium in slight doses does the service as euphthalmin. In stronger doses it is a substitute for the expensive homatropin in determinations of refraction. Hydrochlorate of pilocarpin has, on account of its non-irritating properties, a great advantage over all other miotics.

Dr. A. Luerman, Bremen, in the chapter on Anesthetics and Analgetics, gives a detailed exposé of the physiologic action, clinical application and accessory effects of cocain, its substitutes and rivals: holocain, eucain, tropacocain and acoin, which have gained clinical importance. Acoin is undoubtedly superior to cocain as anesthetic in subconjunctival injections of salt and sublimate solutions.

Each chapter is followed by a bibliography, and the whole essay is most valuable and practically useful. C. ZIMMERMANN.

Pupillary Disturbances in Mental and Nervous Diseases.—BUMKE, DR., Privatdocent and Assistant at the Psychiatric Clinic, Freiburg. I. Br., 262 pp., with 4 Illustrations. Gustav Fischer, Jena, 1904. M. 5, $1.25

Bumke's monograph contains much more than the title suggests, since he also gives an historic introduction, a complete physiology of the pupillary movements, the methods of examination of the pupils and the anatomy of the pupillary reflex paths. This is an excellent addition which, in a very perspicuous style, sets forth the store of our knowledge according to the most recent researches, as well as quite a number of original devices of the author. Of the latter we mention the substitution of the electric for the adequate, normal light stimulus which allows of ascertaining more accurately the consensual reaction, the modification of Hess' pupilometer and the analysis of psychic reflexes. In a similar thorough manner the general pathology of the pupillary movements are discussed, followed by the special pathology. This is considered under: 1. Organic diseases of the central nervous system, as tabes dorsalis, dementia senilis, arteriosclerosis, multiple sclerosis, syringomyelia, tumors, primary degeneration of the motor conducting fibers, encephalitis, poliencephalitis, myelitis, poliomyelitis, meningitis. 2. Toxic diseases of the nervous system: alcoholism, abuse of opium and morphin, bromism. 3. Functional diseases: epilepsy, hysteria, neurasthenia, migraine, chorea, functional psychoses, dementia præcox, imbecility. 4. Traumatism. A bibliography of 617 numbers and an index are appended.

It is a most interesting and instructive work which deserves the widest circulation. C. ZIMMERMANN.

Affections of the Eye in Connection with Other Diseases.—SCHMIDT-RIMPLER, H., PROF. HALLE, A. S. "Die Erkrankungen des Auges im Zusammenhang mit anderen Krankheiten." Second, Improved Edition. With Illustrations. Wien, 1905. Alfred Hoelder, 13 Rotenturmstrasse. M. 13, $3.25.

The second edition of this excellent book will be very welcome, as it has been remodeled to correspond to the recent literature and the increased personal experience of the author. As the size, equality and reaction of the pupils is of special importance, the introductory remarks chiefly consist of a thorough exposition of the examination and the affections of the pupil. The first chapter, on Ocular Affections in Diseases of the Nervous System, occupies almost one-half of the work. First the visual disturbances and ocular affections and their treatment are described and then again referred to under the special review of the diseases of the nervous system. This arrangement is very practical, as at the second place the etiology is found, while the former gives a very exhaustive information on the anatomic and pathologic processes and clinical aspects of the eye troubles.

Choked disc and optic neuritis are noticeably treated with special care, being topics to which the author has, by original investigations, largely contributed. He still adheres to the migration theory (Schmidt-Manz), and sees, although there have arisen several opponents, no reason to abandon it. On the contrary, he considers it supported by new observations of his own and others, which he quotes, and repudiates the phlogistic hypothesis of Leber. The differential diagnosis of papillitis and optic neuritis is clearly stated.

Deviating from others, Schmidt-Rimpler expressly emphasizes that he found genuine atrophy of the optic nerve in cases, observed for many years, in which all symptoms of cerebral or spinal affections were lacking and never set in. General debilitating influences, colds, alcohol, etc., played an important part. He warns against energetic mercurial treatment in simple atrophy, associated with symptoms of locomotor ataxia, even if of undoubtedly syphilitic origin, as he not rarely observed a decided after-impairment of vision. Schmidt-Rimpler firmly believes in the beneficial effect of the constant current and advises its continued use.

Hemianopia receives minute attention, as well as the anatomy, physiology, etiology, diagnosis, etc., of affections of the ocular muscles and nerves on over 100 pages. Consequently the paragraphs on the special affections of the nervous system are shorter; to hysteria, however, a larger space is given.

Retinitis albuminurica is most interestingly set forth, enriched by the author's personal impressions. He thinks that the affections of the retina and kidneys are not sequelæ of one and the same primary cause, but that the former results from the latter by the influences of nocuous substances in the blood (chronic uremia) which act on the vessels and tissues of the retina similarly as in leucemia, gout, syphilis, and cause lasting alterations, especially of the walls of the blood vessels.

The chapter on diabetes is very complete and fascinating, as emanating from many observations of the author on a very large material, enlivened by condensed clinical histories and brief statistics on the frequency of the various ocular affections. Although a reduction of sugar by antidiabetic régime and medication is desirable before cataract operations, a too strict meat diet must be carefully avoided, as, in the hospital at least, it often has a weakening effect and may even induce coma. If an unusually slow development of diabetic cataract materially interferes with the patient's ability for work or enjoyment of life, Schmidt-Rimpler advises artificial ripening and extraction. A more unfavorable prognosis *quoad vitam* than by cataract and affections of the optic nerve is given in inflammations and degenerations of the retina (Schmidt-Rimpler observed these 34 times in 150 diabetic eye patients), but it is not as bad as in albuminuric retinitis. Schmidt-Rimpler never could ophthalmoscopically prove alterations of the vessels in diabetes without albuminuria or syphilis. The differentiating diagnostic characteristics of diabetic retinitis from other central retinal affections are enumerated. In the former Schmidt-Rimpler, in accordance with Hirschberg, frequently found the optic disc and the adjacent portions of the retina not involved.

The ocular affections in connection with constitutional and infectious diseases, intoxications, disorders of the circulatory, respiratory, genital and digestive organs and of the skin are treated in the same fashion. We would be tempted to record more of the interesting contents of this admirable book, abounding in valuable original observations, if space would permit. It is very readable and we most heartily recommend the work. C. ZIMMERMANN.

Local Anesthesia in Ophthalmology.—BEST, PROF., Giessen. Collection of Ophthalmological Essays. Edited by A. Vossius, Giessen. Vol. VI, No. 3. Halle, a. S., Carl Marhold, 1905. M. 1.20, $0.30.

The purpose of this essay, to demonstrate to the practicing physician, out of the large number of local anesthetics, only those which are of real value, is very well accomplished. Instillations of the usual anesthetics into the eye are without danger with regard to general intoxication. An anesthetic of less toxicity than cocain would be preferable in ophthalmology if, in its other properties, it is equal. Under local toxic symptoms, opacities of the cornea, disturbances of circulation (accelerated diffusion into the anterior chamber, affection of the blood vessels and intraocular pressure), and of wound healing, influence on the intrinsic muscles, subjective symptoms, specific irritation and osmotic changes of pressure, sterilization of the solutions are duly set forth. All these points considered, cocain surpasses its rivals on account of its non-irritant qualities. Then acoin, alypin, anesthesin, chloretone, dionin, eucain, holocain, stovain, subcutin, suprarenin, tropacocain and yohimbin are discussed in special paragraphs. In conclusion, a chapter follows on special indications of local anesthesia in operations and diseases of the eye and a bibliography. C. ZIMMERMANN.

Lymphoma or Lymphadenoma of the Lids and Orbit.—RUECKEL, W., Giessen. Collection of Ophthalmological Essays, Edited by A. VOSSIUS. Vol. VI, No. 4. Halle, a. S., Carl Marhold, 1905. M. 0. 80, $0.20.

Rueckel reports a unique case of monolateral simple lymphoma of the upper and lower lids of a girl, aged 17, with formation of cysts. Extirpation resulted in recovery, without relapse.

A review of all cases, so far published, of symmetrical simple, leukemic, pseudoleukemic and monolateral lymphomata follows. Of the later category only 5 observations exist. Since the orbit lacks lymphatics and follicles, Rueckel surmises that the lymphomata develop primarily in the lids and extend from there into the orbit. The diagnosis of lymphoma requires general examination for glandular swelling, syphilis, tuberculosis, of the blood, of the relation of the tumor to neighboring tissues (muscles, bones), of the microscopic structure of excised particles. Observation for several years and no relapse even after partial extirpation exclude lymphosarcoma. C. ZIMMERMANN.

Atlas of Syphilitic and Venereal Diseases.—MRACEK, FRANZ, PROF., Wien. "Atlas der Syphilis und der venerischen Krankheiten mit einem Grundriss der Pathologie und Therapie derselben." With 71 Colored and 16 Black-and-white Illustrations. Muenchen: J. F. Lehmann, 1898. 14 M., $3.50.

We take great pleasure in urgently recommending this excellent, moderate-priced atlas of Mracek to our readers. The introduction consists of a treatise of 128 pages on primary, secondary, tertiary and hereditary syphilis, venereal ulcers, gonorrhea and their treatment, replete with useful information. The pictures are reproductions of water colors, painted by A. Schmitson in Mracek's clinic at the Rudolf's Hospital, Vienna, and represent the most frequent and practically important affections of the genital organs, skin, mouth, throat and eye, e. g., condylomatous iritis, gummatous tarsitis, parenchymatous keratitis, papulous syphilid at the eyebrow, etc. They are beautifully executed, true to nature and artistically perfect. C. ZIMMERMANN.

Biographic Clinics.—GOULD, GEO. M., M.D. Essays Concerning the Influence of Visual Function, Pathologic and Physiologic, Upon the Health of Patients. Vol. III. P. Blakiston's Son & Co., Philadelphia, 1905. $1.00 Net.

This volume consists of a collection of essays upon the influence of the visual function upon health. Two of these are contributed by well-known English ophthalmologists, Simeon Snell and C. Ernest Pronger. The remaining eleven chapters are by the author, Geo. M. Gould, and have been previously published in various journals.

Some of these essays have been abstracted in OPHTHALMOLOGY.

In this, as in former volumes of this series, Gould presents extracts from the memoirs of several writers to show that their lives were made miserable by eyestrain.

The position which Gould has taken in regard to ametropia being the cause of such a high percentage of ocular diseases, the author states that nine-tenths of all the inflammatory and surgical diseases of the eye would be prevented by the scientific correction of ametropia, as well as the decided and positive opinion which he expresses as to the dominating influence of refractive errors in so large a proportion of such conditions as glaucoma, cataract, retinal diseases, sinus, pharyngeal and laryngeal diseases, tuberculosis, nutritive disturbances, disorders of the alimentary tract, liver and kidneys, insomnia, insanity, migraine and other reflex disorders, etc., will probably appear somewhat extreme to the majority of oculists.

It is an established fact, daily demonstrated in the experience of ophthalmologists, that uncorrected ametropia is the predominating etiologic factor in a very large proportion of headaches and reflex neuroses; that some cases of migraine are caused by refractive errors and muscular imbalance; that ocular defects *may* be the *exciting* cause in such abnormal conditions as chorea, neurotic, gastric and intestinal disorders, idiopathic scoliosis, epilepsy, neurasthenia, etc.; that occasional cases of conjunctivitis and keratitis are due to ametropia, and that some forms of retinal and chorioidal diseases are accompanied by refractive errors.

The great importance of ametropia as a factor in the etiology of the numerous reflex phenomena which may arise as a result of it is a subject to which all progressive oculists are alive, and I believe that the experienced American ophthalmologists of to-day are doing careful and conscientious refraction work, but I doubt if statistics taken from the case records of many of us would justify us in taking the extreme ground that Gould has taken.

The author deserves great credit for his masterly presentation of this all-important part of the oculist's work—the careful and accurate correction of errors of refraction—and the reviewer would beg leave to add a word of emphasis to the great importance of accurately correcting the very low errors of refraction. He believes that this work is generally well done in America, despite the statements of Gould, indeed by most ophthalmologists with quite as much skill as is wished for by the author.

The book should be read by every practitioner of medicine, and, even though Gould may be considered an "extremist" and all his "new truths" can not be accepted *in toto* by those of us who are compelled, by our own experience, to take a more conservative stand, it will have accomplished a great deal if it makes medical men, other than oculists, more keenly alive to the great and far-reaching effects of eyestrain upon the health of patients. WILLIAM R. MURRAY.

Corrections in Vol. II, No. 1.

In the original article by Edward E. Blaauw, "Anatomy of the Eye According to the Ancients": Page 45, line 11 from below, for though read *thought;* page 46, line 17 from above, for Alkaeon read *Alkmaeon;* page 46, line 2 from below, for Alkmaecon read *Alkmaeon;* page 47, line 14 from above, read (*about 150 A. D.*); page 52, line 7 from above, for thorough read *through.*—E. E. B.

In the abstract of W. H. Roberts' article, page 133, line 7, word 9 should read *esophoria,* i. e., "A slight esophoria is usually associated with hypermetropia and one or two degrees need not be corrected, as they enable the eyes to be used for the near with greater comfort."—W. H. R.

In the review of G. C. Savage's book, "Ophthalmic Neuro-myology," page 174, an error occurs in a part of the sixth and nearly the whole of the seventh line. The quotation as placed could refer only to the cortical centers or conjugate centers, whereas the language was used in connection with the basal centers. In the preface and everywhere else I have taught that the work done by the verting conjugate centers is, at all times and under all circumstances, normal work. See third paragraph of preface. The quotation which you misplaced should have followed the period in the ninth line.—G. C. S.

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OPHTHALMOLOGY
ESSAYS, ABSTRACTS AND REVIEWS.

VOL. 2. APRIL, 1906. No. 3.

Original Articles.

THE RELATION OF CONVERGENCE TO ACCOMMODATION.*

BY HOWARD F. HANSELL, M.D.
PHILADELPHIA.

The explanation made many years ago by Donders and accepted by students in ophthalmology the world over, that the internal squint of hyperopia is due to the stimulation of convergence by the excessive action of the ciliary muscle is physiologically, anatomically and practically satisfactory. For every diopter of accommodation in emmetropia there is one meter angle of convergence under usual conditions. The desire of fusion of images in binocular vision modifies, to a limited extent, the physiologic relation. By forcing the the accommodation with a weak concave glass, with the preservation of full acuity of vision for distance, a proportionate stimulation is given to convergence. That the eyes, or at least one of them, is not adducted is due to the quality inherent in the visual apparatus when vision is equal or nearly equal in the two eyes and is controlled by the cortical centers. Again, the artifical stimulation to convergence caused by fusion of images through weak prisms, bases in, results in increased innervation without apparent muscular action. That the convergence may be stimulated without entailed coincident change in the refractive status of the eye by contraction of the ciliary muscle is also shown in the prism experiment. In the many tests of the power of adduction I have never found that the acuity of vision was lessened by induced myopia. This can be explained on the assumption that no ciliary response has followed the stimulation to convergence. In spite of the dissociated function of the third nerve muscles, we may believe, in exceptional cases, that myopia and the consequent defect of vision might have been acquired as the result of congenital or acquired over-activity of convergence. The cases are exceptional, because the original defect is one of muscles and not of refraction. By a study of a few cases of this character I desire to reverse the usual order of things, exculpating the refraction which must bear the brunt of about 75 per cent. of the cases of internal squint, and blaming the hitherto blameless muscles of the original sin. Admitting that statistics have proven incontestably that hyperopia is the frequent cause of internal squint—Isler 88 per cent., Stelwag 78 per cent., Schweigger 66 per cent., Müller 76 per cent.—there remains about 25 per cent. to be accounted for. In the minority are included all cases that do not conform to the rule. Graefe (Graefe and Saemisch, second edition) states the objections that have been urged against the accommodation theory: 1. The degree of pathologic convergence bears no constant relation to the hyperopia. If the convergence is too great, one may accept the conclusion that the normal degree existing at first has been increased by the gradual increase in the tension of the internal recti muscles; if too little, it is probable that in time the deficit will be made up.

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* Read before the Section on Ophthalmology, College of Physicians, Philadelphia, December 19, 1905.

2. Cases of anisometropia are observed in which the squinting eye is hyperopic, the fixing eye emmetropic, which he explains by assuming that at a period of the development of the squint the fixing eye might have easily been hyperopic.

3. There are cases of myopia with convergence, hyperopia with divergence. In addition to the possible change in refraction, he assigns as reasons for the anomaly, preceding paralysis, temporary mechanical influences, exceptional pre-existing or coexisting muscle anomalies, defects of vision, anatomic peculiarities of the tendinous insertions, of the orbit, and so forth.

The small per cent. of remaining cases, those not included under hyperopia or any of the exceptions named above, can not be construed as opposing any considerable factor to the acceptance of Donder's theory. On the contrary, they tend to strengthen it, providing we admit that the theory may be reversed and apply primarily to the convergence. It must be remembered, in studying the relation of accommodation to convergence as the principal factor in the production of internal squint, that the majority of eyes, in the early as well as the late periods of life, are hyperopic. The deficiency of the refraction and the ability of the ciliary muscle to overcome it and thus make vision clear for distance and for near must always be the chief agent. No theory that does not include this almost universal condition can offer an acceptable explanation of the causation of internal squint. In other words, while internal squint can exist without hyperopia, it seldom does, because nearly all eyes, both heterotropic and orthophoric, are hyperopic.

We have, for the most part, hitherto considered the phorias and tropias—the functional muscular anomalies—as dependent on the refraction of the eyes for their origin and have scarcely looked at the other side of the question, namely, the refraction as modified by the extraocular muscles. I contend that some of the exceptional cases of heterotropia may be explained by the predicate that through heredity, through the necessity for prolonged vision at an unusually close near point, through excessive innervation to and development of the muscles of convergence, the fault lies primarily with the convergent apparatus and that the state of refraction and the ciliary muscle are exempt from blame. Graefe's arguments above cited are double acting. For instance, "the degree of pathologic convergence has no constant relation to the hyperopia" might be quoted in proof of either side of the question, and to his answer that the convergence changes in degree at different points it might be replied that the refraction is subject to change according to the secondary stimulation to the ciliary muscle. In anisometropia, the squinting-eye hyperopic, the fixing emmetropic, a plausible explanation is that refraction has little or nothing to do with the squint and that the eye squints because of anatomic relations that make the deviation the position of rest. Maddox admits a want of balance in the musculature as a possible cause of internal strabismus. He says, under the paragraph entitled "Nonaccommodative Convergent Squints": "A fair proportion of convergent squints are found to exist without hyperopia or hyperopic astigmatism. Some of these may possibly be due, as Buffon believed, to imperfect visual acuity of one eye leading to voluntary squinting in order to get rid of the disturbing effect of a blurred image, but in a far larger proportion there was probably hyperopia at an early age which has since disappeared. In others the want of balance seems inherent in the musculature, while yet others may have had at an earlier date some paresis either of the ciliary muscles or one or both of the external recti." Maddox also alludes to the nervous element of strabismus as distinguished from the accommodative element. Under the influence of emotion or excitement the squint is increased. In this connection I may mention the case of a patient who, although fully corrected of hyperopia and astigmatism for years, develops a magnificent internal squint under the stimulation of a moderate quantity of alcohol. In such cases it seems evident both that accommodation can have nothing to do with the etiology and that the deviation is a purely functional one. That the ciliary muscle is inhibited from undue contraction at the time of the convergent stimulus would point to the independent action of the convergence and accommodation beyond the range of relative convergence and accommodation and also to the control of the ciliary muscle by the higher centers through the ciliary nucleus on the floor of the fourth ventricle. This is not always the case, however, as is shown in the history of a case previously alluded to in a paper read before this section. A woman of 35 had, under the ordinary demands of vision for distance and near, wide divergent strabismus. She had no disease of the eyes or opacity of the media and full acuity of vision in each eye when used separately. Binocular vision for distance, however, of which she was fully capable under forced convergence, was accomplished only with the simultaneous production of 3 D. of myopia. Binocular vision for near was beyond the power of adduction. In this case the ciliary muscle contraction was always secondary to the convergent stimulus. If this is true in one case it is probably true in others, and the possibility of its occurrence justifies Maddox's assumption that the want of balance seems inherent in the musculature. This statement does not imply an anatomical shortening of an internus or the weakening of an externus through molecular change in the muscular fiber. I exclude all structural alterations and refer only to the primary innervation of the extraocular muscles supplied by the third nerve and the secondary contraction of the ciliary muscle or the entire absence of the function of that muscle. I have now under observation another patient in whom the want of balance of the extraocular muscles proves the independence of the divergent strabismus of the function of the ciliary muscle. A boy of 18 has full acuity of vision and .50 D. of hyperopia only. For distance the divergence is equal to a prism of 20°. Diplopia is immediately apparent when one eye is covered with a red glass, but the images are *homonymous,* a condition that has never been satisfactorily explained. What relation, if any, the false projection may have with the strabismus I am unable to determine. It may be that in this case, at least, the "strabismus incongruous," as Maddox calls it, is a part of the disturbed relation between the functions of the third nerve and of the optic nerve, for this patient has also a left hyperphoria of 3°.

Prisms, R. 1°, base up, L. 1½°, base down, restore the balance between convergence and divergence and abolish the strabismus. In all the tests that I have made in this case I have never found other than a normal action of the ciliary muscle. Accommodation remains uninfluenced by the excessive demands on the converging muscles or the relaxation of those muscles, nor could I discover that the contraction of the ciliary muscle modified the action of the extraocular muscles. The conclusion that the fault lies entirely with the latter appears to be justified. A third case is that of a man of 40 who has been wearing 8° prisms, bases out, for 6 years. He had manifest internal strabismus measuring 28° of prism. V. R. 20/30, L. 20/20. Refraction R. — .25 ⊃ + .75 c. ax. 70°, L. + .50 c. ax. 100°. He complained, with and without the prisms, of confusion of all objects near and far. He was entirely relieved of his symptoms by double internal tenotomy. The state of his refraction early in life is unknown. According to his history, the eye symptoms appeared when about 30 years of age. He can not remember that he had ever suffered with his eyes in his youth or that he had been cross-eyed. His occupation is an outdoor one and he uses his eyes for near work only in the evenings. That his case did not belong to the usual accommodation squints is shown by the gradual aggravation of the squint without increase and with possible lessening of the ametropia and the preservation of full vision in each eye. Moreover, the strabismus was cured by operation without resort to glasses.

In conclusion, I may be allowed to quote a few lines from Hansell and Reber's "Muscular Anomalies": "The susceptibility of the nervous system plays an important rôle in the causation of muscular anomalies, particularly esophoria. By that expression is meant an abnormally acute impressionability of the nervous system induced by lack of proper nourishment from deficiency of oxygenated blood, a stasis of the venous or arterial supply from disturbance of the circulatory system—in short, a neurotic disposition. That an underlying predisposition to irregular nerve activity is an essential contributing factor to the development of muscular imbalance and to the symptoms accruing from it is demonstrated by the well-known fact that many individuals who have the theoretic local conditions assumed to give rise to muscular asthenopia use their eyes constantly without discomfort; furthermore, in the absence of the local causes that are conceded to produce esophoria, and in the presence of those that are usually causative of exophoria, esophoria is often present and gives rise to no symptoms. Identical inconsistencies are illustrated in the study of other than eye diseases. It is not strange, therefore, that we are often at a loss to ascribe the mysterious unbalancing of the ocular muscles to a competent cause and are compelled to invoke the aid of the supposition of a deranged nervous organization.

ATYPICAL EXOPHTHALMIC GOITER WITH ENDOTHELIOMA OF THE PITUITARY AND THYROID BODIES. DEATH FROM GENERAL SEPSIS. AUTOPSY.

BY H. V. WÜRDEMANN, M.D.
AND
WILHELM BECKER, M.D.
MILWAUKEE.

(Illustrated.)

The causes of exophthalmos are so varied that an attempt at their enumeration would be a catalog of most of the diseases of the head which are accompanied by any growth or exudate that could occur in the orbit. Among them are such anomalies as very shallow orbits, acquired anomalies, hydrocephalus, meningocele and nævus; lesions of the bony walls, periostitis or osteoperiostitis, subperiosteal abscess, caries and necrosis, periostosis, hyperostosis or exostosis, gumma, or syphiloma of the periosteum. Injuries of the orbit following blows or operations, fracture or dislocation of the orbital walls; emphysema and hemorrhage into the orbit; orbital cellulitis, myositis, tenonitis, thrombosis of the orbital veins and cavernous sinuses. Pulsating exophthalmos, due to aneurism, either true or traumatic; arteriovenous or varicose angiomata or erectile tumors. True tumors originating in the orbit, eye, or lacrimal gland, or in the neighboring frontal, ethmoidal, sphenoidal or maxillary sinuses or the cranial cavity. Diseases or inflammations of the accessory cavities of the head adjacent to the orbit.

Proptosis is the prominent symptom of exophthalmic goiter, a peculiar disease of the sympathetic nervous system, caused by changes in the ductless glands, more particularly the thyroid. This disease is characterized by three prominent symptoms: (1) Protrusion of the eyeballs; (2) enlargement of the thyroid gland; (3) tachycardia. Any one of these symptoms may be absent or so little pronounced as not to be particularly noticeable. Associated with these three cardinal symptoms is general nervous imbalance. Actual anatomic lesions are found in many of the organs.

Any, or several, of the above enumerated conditions may contribute to the ocular protrusion. Although the latter symptom is manifest, the cause of the complaint is never obvious and must ever be sought by searching examinations in which the process of exclusion is prominent. In all cases this symptom-complex is simply an evidence of some form of pressure in the orbit, and the term is but an expression denoting dislocation of the eyeball.

The following case afforded an opportunity for both ante- and postmortem study and showed many interesting features.

CLINICAL HISTORY.

Mr. C. N. C., aged 61, American, was brought to Trinity Hospital, Milwaukee, Wis., Feb. 19, 1904, by Dr. George Love of Pewaukee, for consultation and treatment on account of great exophthalmos attended by loss of vision and ulceration of the cornea.

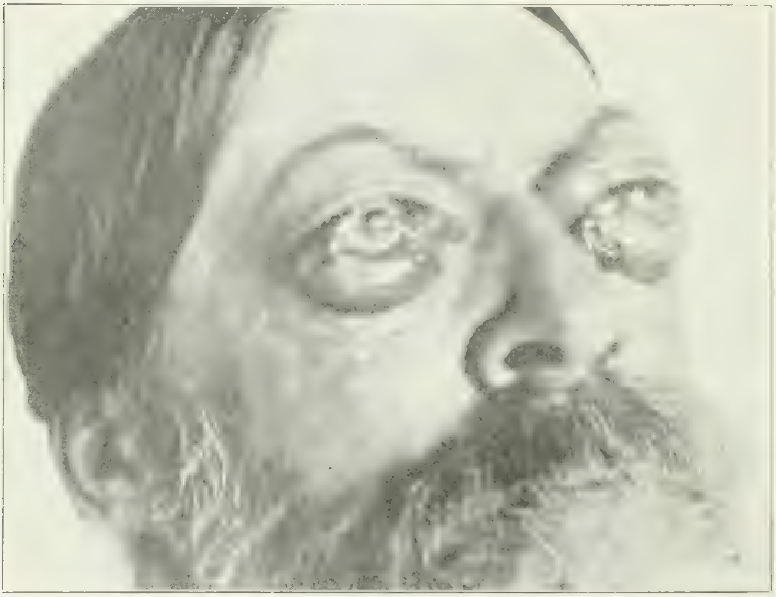

Fig. 1.—Photograph of Patient, Feb. 20, 1904.

Anamnesis.—Patient lived in a small country town for many years; occupation, carpenter; was a church member, and the general habits were reported to be good; was the father of several grown sons and daughters, who were said to be healthy. His health was good until seven months before, when his eyes became inflamed and later protruded. About a month before first seeing patient he came to Milwaukee and was said to have been treated at St. Joseph's Hospital by an eye specialist for several weeks by *x*-ray. The eyes, however, protruded more, became more inflamed and vision further diminished. He returned to the village, and about a week later was brought in by Dr. Love.

Status Præsens.—The patient is a large, well-developed old man;

conversation rational, and evidently in possession of his mental faculties. There is no evidence of muscle or nerve paralysis, although he is quite weak; temperature, 101°; pulse, 90; heart sounds are normal, but intermittent; there is slight enlargement of both lobes of the thyroid gland, the region of which is sensitive to pressure; the urine normal. He does not complain of pain at any time in any locality.

Interest centers upon examination of *the eyes.* Proptosis, great chemosis of conjunctiva, which protrudes between lids, so that eyelids can not be closed over the corneæ. Serpiginous ulceration of both corneæ, almost around the periphery; corneæ steamy; pupils could just be discerned and apparently dilated to atropin; purulent discharge from both eyes. Microscopic examination showed streptococcus pyogenes and other cocci. Eyeballs slightly divergent, but no paralysis, and they could be moved in all directions. Vision of both eyes equals movement of large objects.

Nasal Passages.—Purulent discharge from both sides. Electric-light test, probe, and syringe showed ethmoidal, frontal and maxillary sinuses apparently normal. The probe passed back to the sphenoid brought away thick crusts, and the nasal douche, used several times a day, brought out some mucopurulent secretion which contained streptococci, staphylococci and saprophytic germs.

Examination of ears showed no evidence of suppurative process, although patient had chronic aural catarrh.

The thyroid gland was slightly enlarged and its left lobe hard to touch.

The heart beat was rapid (70-80), for a man of his age, and intermittent, but physical examination did not show any apparent lesion.

Diagnosis.—Tentative diagnosis of exophthalmos, with secondary ulceration of the cornea, due either to tumor or nasal infection, causing a cellulitis of the orbit, or possibly an atypical case of exophthalmic goiter.

Prognosis.—An opinion on this, like the diagnosis, was deferred for several days, and then his family advised that the prognosis, both as to vision and life, was hopeless.

Course and Treatment.—As the family desired the man to remain in the hospital to be cared for until his end, we kept him under observation and relieved his sufferings according to the symptoms. The temperature dropped to 99° next day, February 25 being 98° and pulse 88. For a few days the temperature remained about 99° and the pulse between 70 and 80, respectively, when a rise in both was observed, the temperature finally reaching 103° and the pulse going as high as 120, the latter becoming more intermittent unto time of death. (See Figs. 2 and 3.) General weakness became more progressive, and the patient had to be turned in bed during the last few days of his life.

General Treatment.—Nutritious diet of eggs, milk, soups and wine. Strychnin and beef juice, bowels kept open by Rochelle salts and enemata. Seiler's solution was freely used every three to six hours by nasal douche. The eyes were given hot boric compresses, for one-half hour at a time, every third hour; argyrol (20 per cent.) in cod-liver oil after compressing; atropin (1 per cent.) three times a day.

On February 20 multiple incisions in the chemosed conjunctiva were made, the hot compressing continued. The right cornea becoming hopelessly ulcerated, an exploratory aspiration of the orbit was made. This brought nothing away; the tip of the aspirator could be moved around the ball as though there were an open room back of it.

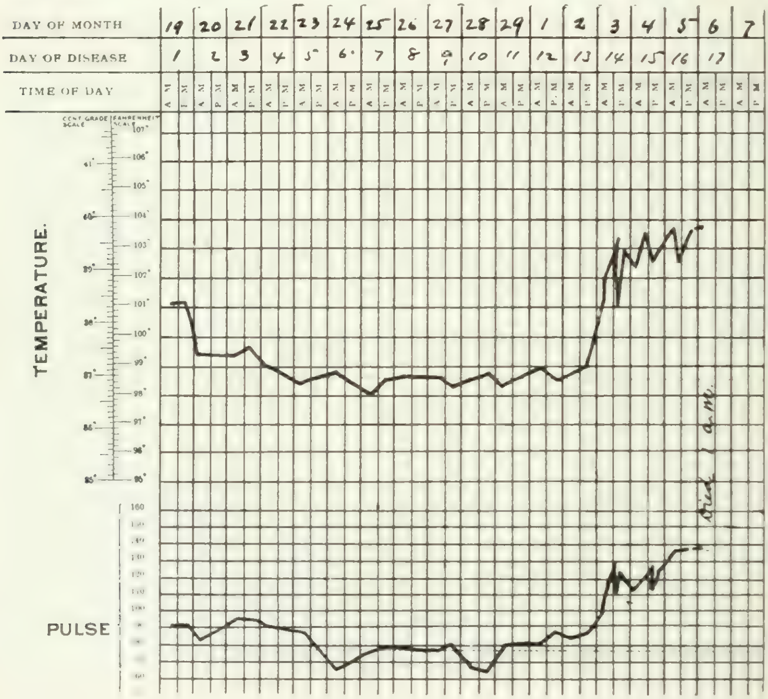

Fig. 2.—Temperature and Pulse Charts.

February 26 the right globe burst during the night. Chloroform was given and the eye was enucleated the morning of February 27. Nothing could be felt in the orbit, and there was no pus, although the tissues were greatly swollen and edematous. No healing took place to time of death, the tissues remaining hard and the edema persistent. March 2, on dressing the eyes, the lens of the left was found on the gauze, the whole of the cornea having melted away. There was remarkable light perception, the patient complaining of the brilliancy of the light on removal of the bandages. The pupil and vitreous were clear. On this day the patient's mind showed evidence of approaching dissolution in mental torpor, the temperature rose to 102°, pulse to 100, respiration slow and feeble; so this eye was left in and simply kept clear of pus. Death from meningitis occurred at 1 a. m. March 6.

AUTOPSY REPORT BY DR. WILHELM BECKER.

Male body, age apparently 50 years. Teeth defective. Rigor mortis disappearing; still present in maxillary muscles. The eyes have been removed. (The right enucleated February 27; the left, with contents of orbit, at the postmortem by Dr. Würdemann.) No exudation from orifices of the body; no external marks of violence. Slight erythema over nates. Postmortem edema on dependent portions of the body. On turning the body on its anterior surface, a considerable quantity of sanguinolent fluid exudes from the mouth.

Head and Cranial Cavity.—Scalp and underlying tissues negative. Bones of cranium negative. No adhesions between dura and pia mater, right subdural space of convexity is distended by an opaque, slightly sanguinolent, somewhat viscid material. Numerous petechiæ in the pia; vessels of the pia hyperemic. Similar condition on the right side, only less marked. The aforementioned petechiæ reach into the cortex to a distance of 5 mm. The gray matter of the cortex is markedly hyperemic. The lateral ventricles are moderately distended with sanguinolent fluid. Their ependyma is diffusely reddened. The vessels of the right chorioid are dilated and partly filled with a viscid, opaque material; attached to the vessels are numerous small, soft, slightly diaphanous, irregular masses, varying in size from 1.5 to 5 mm. in diameter. The pituitary body measures 25 mm. anterioposterior, 12 mm. in its lateral diameter, 26 mm. in its superio-inferior diameter. It is made up of soft, slightly diaphanous, mucoid tissue. The coverings of the base of the brain, especially in the anterior fossa, are likewise hyperemic, being diffusely reddened and showing numerous petechiæ. The bones of the base of the brain show no special alterations.

Abdomen and Thoracic Cavity.—Abdominal fat moderately developed; moderate distension of the abdomen. Pectoral muscles poorly developed.

Situs and Condition of Organs.—Small intestines considerably distended. Appendix in normal position. Stomach protrudes 5 cm. from beneath the liver and costal arch. Liver flush with costal arch. No adhesions of the liver. Ascending and transverse colon negative; descending colon tightly bound down by adhesions and contracted.

Bladder protrudes 7 cm. above the symphysis pubis.

The heart is covered by lung to a normal extent; old adhesions between costal and parietal pleura on lower left lobe of lung. Lateral aspect.

Spleen 15-7-3.5 cm. Tissue dry and firm, containing areas of amyloid degeneration and considerable interstitial changes. Its vessels, especially the venous, were considerably dilated.

Stomach moderately enlarged. Vessels of the serosa are rather anemic. It contains about 20 c.c. of greenish-gray, malodorous material; some casein flakes therein. Gastric mucosa anemic, especially near cardia.

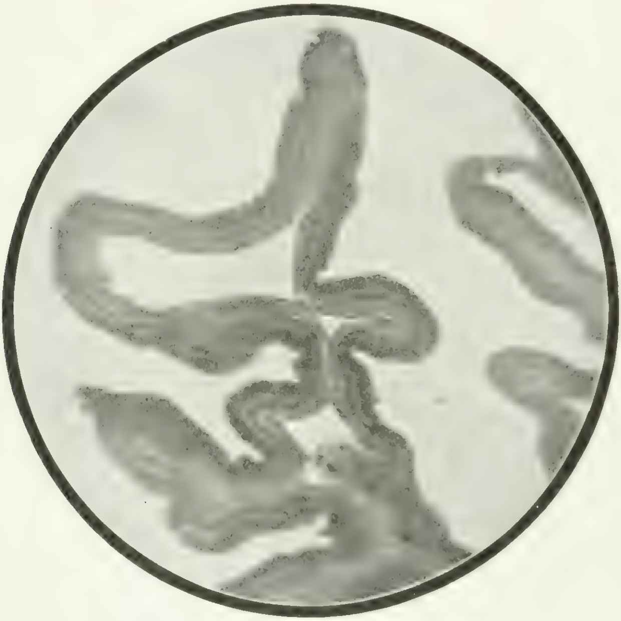

Fig. 3.—Bunching up of the Retina

Liver 38-21-11 cm. Liver tissue pits very slightly; it cuts with some resistance; cut surface dull, yellowish-red in appearance; lobulation not visible. Over anterior surface an irregular scar invading the liver tissue to extent of 7 mm. Diagnosis: cloudy swelling; obsolete gumma.

Pancreas negative. Intestines negative. Gall bladder negative. Bladder negative.

Kidneys: Left moderately fat, adrenal undergoing usual postmortem degeneration. Ureter open. Capsule of the kidneys strips with difficulty. Venæ stellatæ stand out prominently. Kidney measures 12x4x1.5 cm. At lower pole of the kidney a cyst of the size of an English walnut. Relation of cortex to medulla normal. Right kidney similar conditions.

Thoracic Organs: Lungs crepitate throughout; posterior portions of lower lobes are moderately congested; the larger, as well as the smaller bronchi, are filled with a mucopurulent material; the mucosa is deeply reddened and in some areas denuded of its covering epithelium.

The heart is reduced in size; its muscular walls are flabby. On section the myocardium presents a brownish-red color and the endocardium characteristic white stripes of fatty degeneration. Blood removed from right ventricle is inoculated into two agar and two serum tubes; scanty growth appears after 36 hours at 37°. The growth consists of a pure culture of streptococcus pyogenes. Ten c.c. of a suspension of the cocci injected subcutaneously into a medium-sized rabbit produced a marked local phlegmonous inflammation and killed the animal in two days.

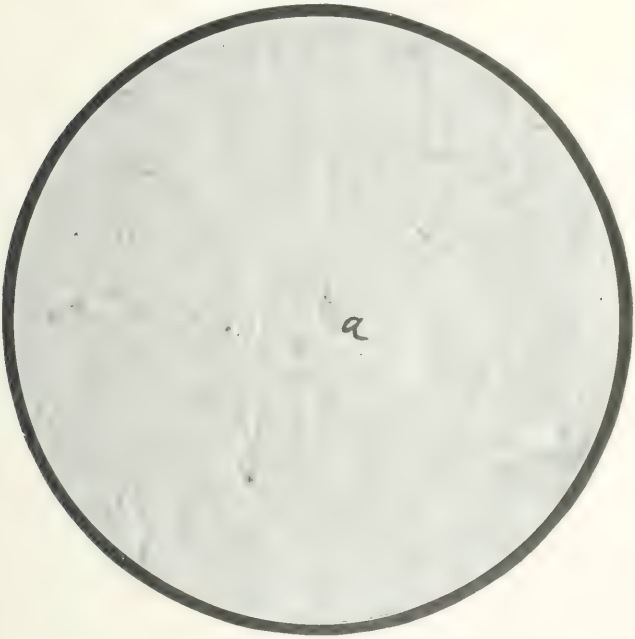

Fig. 4.—(× 25) (Leitz 2—1). Longitudinal section through optic nerve, a few mm. from lamina cribrosa. Stain: Uran black blue for axis cylinders. Axis cylinders have disappeared. At "a" a microscopic abscess. Diffuse R. C. infiltration.

The right lobe of the thyroid gland measures 6x4x3 cm.; its consistency is considerably increased. Very little colloid material; distinct strands of white connective tissue. In the lower third a cyst, 14x11 mm., containing a yellowish, calcareous material; in the upper third a cyst of about the same size, filled with a mucoid material. The thyroid isthmus measures 13 mm. in diameter and is quite fibrous. Left lobe shows the same condition as the right, but there are no cysts.

Dr. Würdemann removed the eyeball and entire contents of the left orbit, macroscopic examination of which showed the usual amount of orbital fat, in which the several orbital tissues were *in situ;* the eyeball having broken open, its contents were found to be apparently a grumous, bloody mass, the cornea having ulcerated away; no trace of this anterior structure was found. The right eye, which had been enucleated, was sectioned and given to Dr. Becker for microscopic examination.

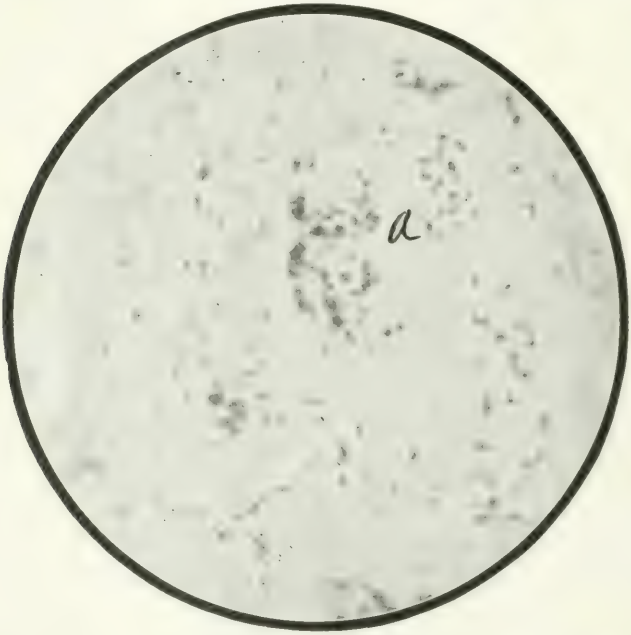

Fig. 5.—(×250) (Leitz 6—1). Central area of preceding section more highly magnified. "a" Polymorphonuclear leukocytes (pus cells).

MICROSCOPIC FINDINGS.

Right Eye (one-half is shown around).—The globe of the eye is filled with a bloody, purulent material. The cornea has been perforated. The anterior organs of the eye are lost. The coverings of the eye are infiltrated with a sanguino-purulent material. The retina is bunched up, as shown in Figure 3. The optic nerve is infiltrated with a purulent material. There are numerous minute abscesses within the nerve. The nerve strands themselves have lost their staining power. The nerve strands consist of fatty material (Figs. 4 and 5).

Pia Mater.—Figure 6 and Figure 7 are microphotographs of a vein in the pia at the convexity of the anterior lobes. At "a" the tissue is shown; "b" represents the lumen of the vein; "c" is a minute abscess in the wall of the vein, breaking into the lumen of the vein at "a." Figure 7 is this same abscess, more highly magnified (about 300), and shows the character of the cells in the abscess, namely, polymorphonuclear leucocytes. In between these leucocytes or pus cells numerous streptococci are found.

Brain Cortex.—Shows numerous changes, the most striking one is a degenerative change in the large pyramidal cells of the cortex. In most of these cells Nissl's granules are entirely obscured. The characteristic ring around the base in most of the cortical cells is washed away (Fig. 8, "a" and "b"). Quite a number of the capillaries, arterioles and venules of the cortex are obstructed by thrombus formation, not only white thrombi, but also red thrombi. Figure 8, at "c," shows one of these thrombosed venules. In the uppermost layer of the cortex round-cell infiltration is beginning to appear. This is shown in Figure 6, at "a."

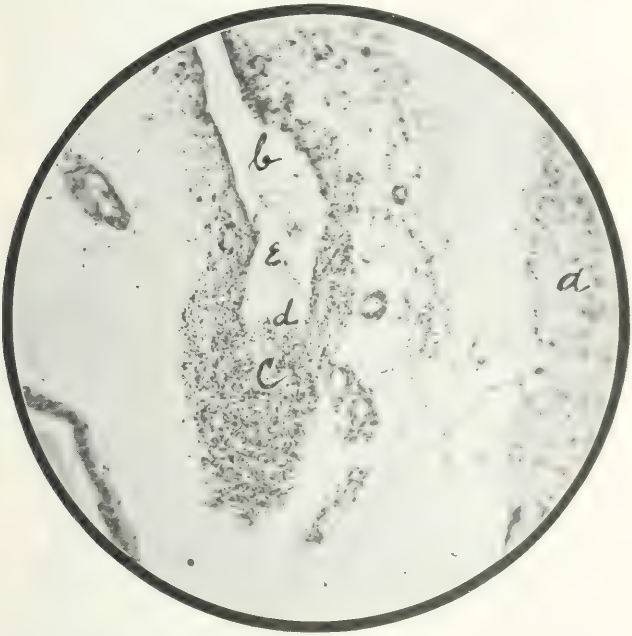

Fig. 6.—Microscopic Abscess in the Wall of Vein of Pia (between Gyri.) (Leitz 2-4.) (a) Cortical tissue; (b) Lumen of vein; (c) Abscess at (d), breaking into lumen of vein; (e) Endothelia of the vein exfoliated and thrown into lumen.

Chorioid Plexus (Fig. 9).—The intervascular tissue is infiltrated and crowded with proliferated cells. The character of the

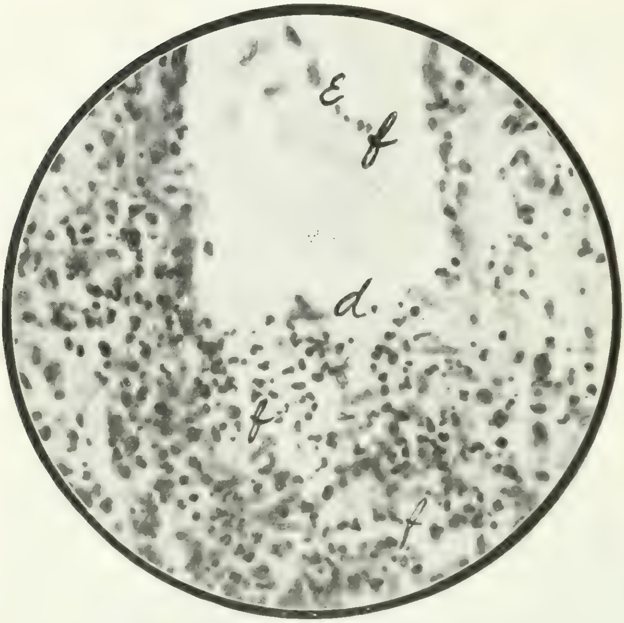

Fig. 7.—Same as Fig. 6. (Leitz 6-4.) (e) Same as in Fig. 6; (d) same as in Fig. 6; (f) Polymorphonuclear leukocytes (pus cells).

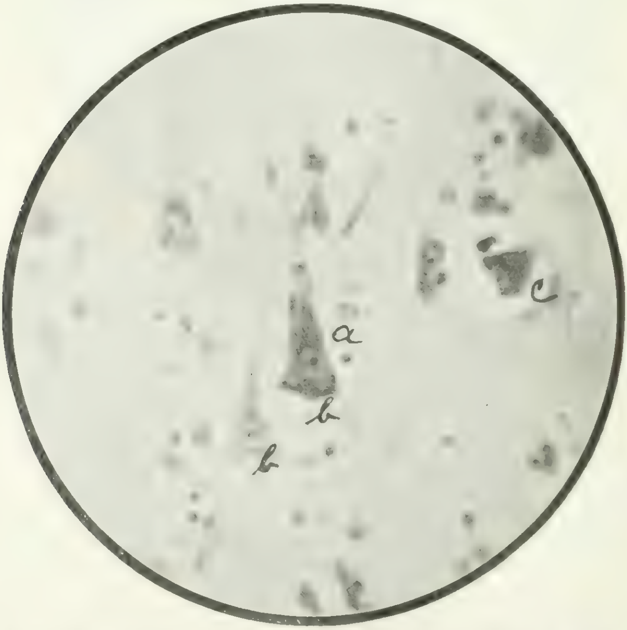

Fig. 8.—Cortex of brain, showing four pyramidal cells. (Leitz 6-4.) In most of the large cortical cells the Nissl's granules are entirely obscured. (a) Cells showing remnants of Nissl's granules; (b) the characteristic ring around base of cortical cell is washed away; (c) blood vessel devoid of endothelium.

cells is equally divided into polymorphonuclear leucocytes and round cells. The granules of the brain sand seem to be quite numerous.

Hypophysis Cerebri or Pituitary Body (Figs. 10 and 11).—Figure 11 represents a section which includes some of the nervous connective tissue lobe and also some of the glandular lobe. Some of the normal cavities lined with cuboidal epithelium are still preserved. The ganglion cells consist of quite regularly-sized round cells, with no distinct arrangement, limiting capsule invading diffusely and irregularly both lobes. The glandular lobe is invaded mostly. Figure 10 shows the border line between the glandular and nervous lobe. It also shows some of the remnants of the glandular lobe, and at "d" degenerated chromatophile cells.

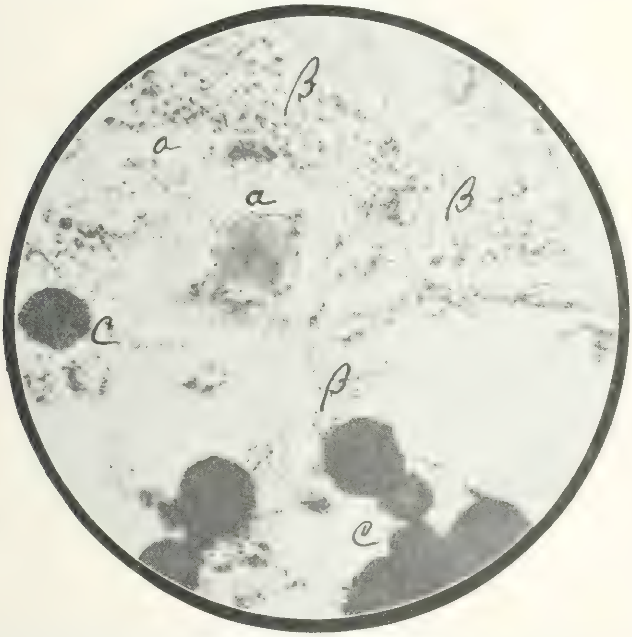

Fig. 9.—Chorioid Plexus. (Leitz 4-4.) (a) Arteries: walls thereof in hyalin degeneration; (b) perivascular tissue. R. C. infiltration and pus cells; (c) granules of "brain sand."

Thyroid Gland (Figs. 12 and 13).—At "a" in Figure 12 a capsule-like structure separates the above-described island of atypical from the typical thyroid tissue. It will be seen from the photographs that the atypical tissue very much resembles that in the hypophysis. Figure 13 gives a larger magnification of the atypical or tumor tissue in the thyroid gland.

In our opinion it is extremely difficult to decide the exact character of the tumors. The morphology points to a sarcomatous neoplasm. Considering, however, the comparative slowness of their growth and the absence of metastasis, one can not help believing that they were of benign nature, perhaps an endothelioma.

REMARKS ON THE PHYSIOLOGY OF THE PITUITARY BODY AND ITS RELATION TO THE THYROID GLAND.

In spite of a number of investigations relative to the thyroid gland and the hypophysis, no definite results have been arrived at. The pituitary body may be divided into two portions: glandular and connective tissue. The glandular part consists of closely packed acinous cells; two different varieties of cells may be distinguished; a large, irregularly shaped epithelial cell, which contains numerous chromophilic bodies in the protoplasm. These stain reddish and yellow with eosin. The function of these cells is not definitely known. The other variety of cells in the glandular tissue of the pituitary body are called "chief" cells. Their protoplasm is clear and there is not so much of it. They have a round, uniform-sized nucleus. The function of these cells is not definitely known, but there is no doubt that the cells in this ductless gland are under the influence of the sympathetic nervous system, in a similar way as

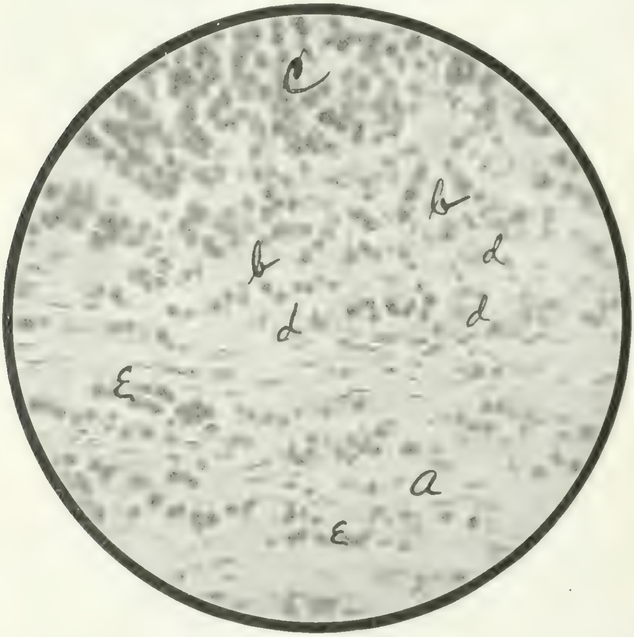

Fig. 10.—Hypophysis Cerebri. (Pituitary body.) (Leitz 3-4.) (a) So-called "nervous lobe" invaded by tumor tissue; (b) glandular lobe (remnants; (c) tumor tissue; (d) chromatophile cells, degenerated; (e) tumor cells in nervous lobe.

the cells of the thyroid gland are controlled by the sympathetic nervous system. The carotid ganglion of the sympathetic nervous system is the ganglion that has the closest relation to these two ductless glands. We know that certain giant growths, as acromegaly, are accompanied by hypertrophy of the pituitary body. It seems, therefore, that the growth of the osseous system and the skin is influenced by the hypophysis. Thyroidectomy performed in animals has frequently been followed by hypertrophy of the hypophysis. Feeding with hypophysis substance has not brought any results in normal individuals.

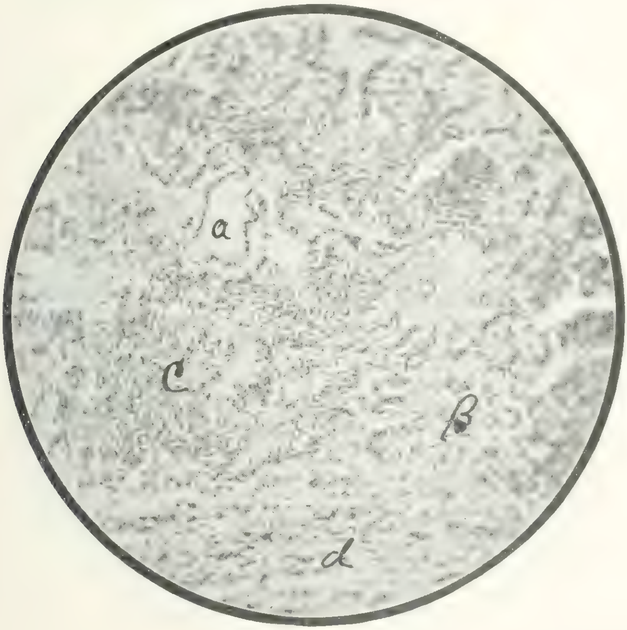

Fig. 11.—Hypophysis Cerebri. (Pituitary body.) (Leitz 3-4.) (a) Cavity lined with cuboidal epithelium; (b) normal tissue of grandular lobe; (c) tumor tissue; (d) "nervous" lobe invaded by tumor tissue.

"There is no aspect of modern medicine more fascinating than that which deals with those glands which possess a so-called internal secretion. While the physiology of some of these structures is still incomplete, that of others is fairly clear, and the field is one in which pathologic lesions with the concurrent alterations in function may well serve as aids in clearing up obscure physiologic questions. In the case of the thyroid gland, and to a lesser extent in the case of the adrenals, physiology has been aided both by pathology and by experimentation, but in the case of the hypophysis cerebri experimentation is extremely difficult, on account of the anatomic situation of the gland, and we must rely largely on clinical and pathologic data to furnish us with physiologic facts.

"The question of the function of the hypophysis cerebri or pituitary body has been investigated to some extent by observing the effect of the injection of extracts of the gland into animals. It can not be said that striking results have been obtained by this method. Substances which raise the blood pressure, and others which lower it, have been isolated, but in no case have lesions in any way resembling acromegaly or giantism been produced. Perhaps such results could hardly be expected if we accept the widely held view that acromegaly is due to a hypersecretion or to a changed secretion of the hypophysis. The disease is generally a chronic one, and it is likely that injection experiments would have to be carried on for months or even for years to imitate the effects of such a hypersecretion. As far as pathologic anatomy is concerned, one fact stands out in the recent studies of acromegaly, and that is the constant presence of some lesion of the hypophysis. While the majority of observers see a causal relation between the enlarged hypophy-

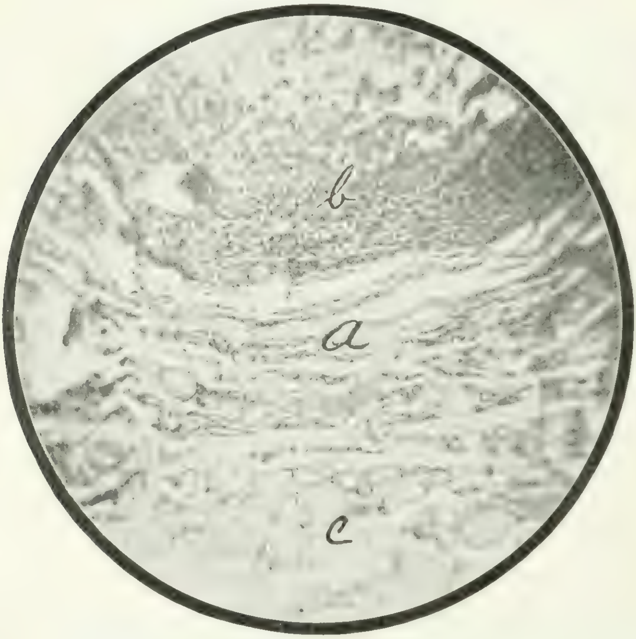

Fig. 12.—Thyroid Gland. (Leitz 2-4.) (a) Capsule separating island of atypical tissue from typical thyroid tissue; (b) atypical tissue; (c) thyroid tissue.

sis and the acromegaly, a fair minority think that the enlargement is an effect and not a cause. This latter view is supported largely on account of the fact that there are a good many cases on record in which a tumor of the hypophysis existed without acromegaly. It is questionable whether this apparent disagreement with the hypersecretion theory of acromegaly can not be shown to be invalid in many, if not in most, of the reported cases of hypophyseal tumor without acromegaly.

"Assuming, for the moment, that acromegaly is due to a hyper-

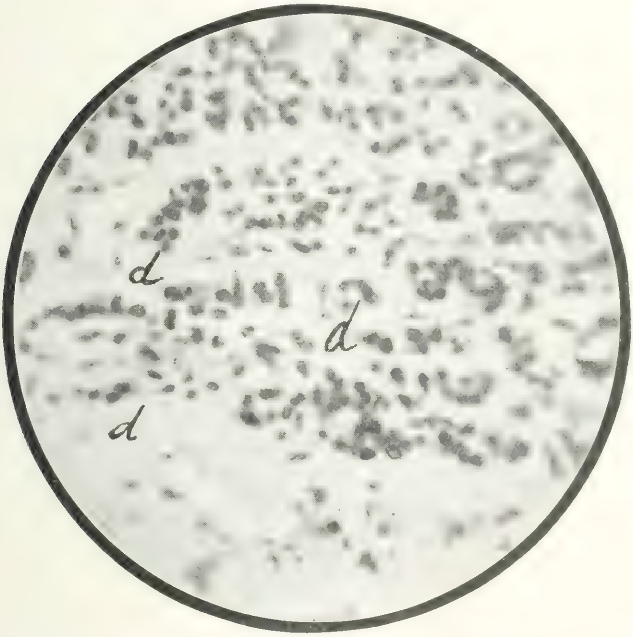

Fig. 13.—Thyroid Gland. (Leitz 6-4.) (b) Same as in Fig. 12. (Atypical tissue); (d) hyalin connective tissue; the nuclei represent the atrophic parenchyma.

secretion of the hypophysis, how can we explain these cases of hypophysis tumor without acromegaly? A review of such cases shows at once that some of the so-called tumors are destructive inflammatory lesions, such as gummata or tubercles. In other cases, the growths are metastatic, and these tumors also necessarily destroy the gland substance. The same is true of spindle-cell sarcomata and similar tumors which spring from the gland framework and destroy the more important structures. The difficulty arises when we attempt to explain the lack of acromegaly in cases with adenomata of the hypophysis, as this is the lesion most frequently found in later years in this disease. In some instances, acromegaly is probably overlooked, for we know that there are cases, the so-called *fruste* form of the French, in which the ordinary lesions are very slight in degree. In other cases, the hypophyseal lesion may have occurred in individuals of advanced age.

"Cestan and Halberstadt claim that acromegaly does not occur after the age when the periosteum ceases to have marked bone-forming tendencies. In some such cases there is evidence to show that excessive obesity may take the place of the ordinary lesions, a sort of vicarious acromegaly. On the other hand, it is difficult to explain true acromegaly resulting from primary sarcomata of the hypophysis, just as it is difficult to explain a lack of Addison's disease in primary new growths of the adrenals.

"There is a good deal of evidence to show that in such cases the tumor cells may take on the function of the gland cells from which they originated. Such a thing has been observed in bile-forming secondary, as Kollavits[1] claims, or whether it is primary, as the majority of observers hold, is not yet satisfactorily settled and more work must be done before we can reach a definite conclusion."*

RÉSUMÉ.

The clinical history and postmortem findings show that we have had to deal with an atypical case of exophthalmic goiter. The lethal ending could not be ascribed to this disease, but was a secondary process following a streptococcic infection, either transmitted through the cribriform plate of the ethmoid, through the blood vessels leading from the nasal cavity to the meninges, or to a general septicemic process from absorption of the purulent nasal material, or even that from the corneal ulceration, giving rise to secondary leptomeningitis and encephalitis. The extensive general infection found postmortem certainly shows that the use of streptolytic serum or any other medication was foredoomed to failure.

In support of our contention of the principal disease or congery of disease symptoms being exophthalmic goiter, we have shown that there was pronounced exophthalmos of many months' duration, with lagophthalmos, resulting in secondary infection and ulceration of the cornea and panophthalmitis. Such a condition only occurs in the severest cases of this disease, especially in those where the general nutrition becomes greatly impaired. There was dilatation of the arteries and veins behind the eyeball, which is the supposed cause of the exophthalmos. The occurrence of an optic neuritis with microscopic abscesses in the optic nerve was demonstrated postmortem, but the latter condition may be ascribed to extension from the meningeal inflammation. The patient was not seen by us sufficiently early to demonstrate the existence of the Graefe or Stellwag signs, during the course of our observation the ocular protrusion and chemosis being too great to allow any extensive movement of the upper lid.

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*Editorial, Journ. A. M. A., April 29, 1905.

The heart showed excited action* and the postmortem gave evidences of an endocarditis. The arteries showed increased pulsation. The nervous symptoms were not specially pronounced.

The thyroid gland was found somewhat enlarged and a bruit could be heard over it before death. The postmortem showed degenerated endothelial tumor in the structure.

The participation or coincidental endothelial degeneration of the pituitary body has been dwelt upon, and seems to show some relation between this ductless gland and the thyroid. No evidences of acromegaly were found. However, the patient was past the period of growth and the hypophyseal lesion may not give rise to the ordinary symptoms of acromegaly in advanced age.

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*In the discussion of this case before the Medical Society of Milwaukee County the question of tachycardia with a pulse rate of 70-80 was doubted. I contend, however, that such a rate in a person whose pulse would normally beat 40-50 per minute, could well be denominated tachycardia. In this case, however, this is only a supposition, as no previous heart history was obtained. As before noted, however, tachycardia is not absolutely essential to the diagnosis of exophthalmic goiter.

REPORT OF A CASE OF CYSTIC DEGENERATION OF THE PITUITARY BODY, WITH PRESSURE ON THE OPTIC CHIASM.*

By W. H. Peck, M.D.

CHICAGO.

Patient, lady residing in New York City, aged 41 years, history negative up to two years ago, when she underwent an operation for removal of the ovaries and appendix, the recovery from which was uneventful. She was married, the mother of one son who is 8 years old and in perfect health, and never had a miscarriage. Menstruation did not occur after the operation and she gained thirty pounds in weight. About one year ago she fell from a street car, striking the back of her head.

Last March her husband wrote me that she was becoming quite blind, supposedly from an error of refraction or presbyopia, requesting me to recommend to him an oculist located in New York. I advised him of the seriousness of the symptoms and he called Dr. John D. Lynch and Dr. Janeway in consultation and they diagnosed the case as a lesion of the pituitary body with pressure on the optic chiasm. Dr. John D. McBarron, of New York City, was placed in charge of the case. June 14 her vitality became low and there was an inclination to sleep continually. Her thirst seemed unquenchable, large quantities of water being consumed, and passing daily seven to eight quarts of urine; the skin was dry, appetite slight, memory and eyesight rapidly failing.

During the latter part of June she occasionally stated that her head ached and she felt tired. At times her extremities became cold, the excessive thirst continuing without abatement.

I went to New York City July 7, examined the patient and found she had bitemporal hemianopsia, pupils dilated, ophthalmoscopic examination revealing a normal-appearing fundus, and the vision was six two-hundredths in each eye. At that time the urine had increased from seven and eight quarts daily to twelve. She slept most of the time when left alone, but talked and became quite bright and sparkling when any one was present. A mild headache and a localized pain at the back of the right eye was a continual occurrence. She was, however, able to read newspapers and a large sign on a building about a block away through the window from where she lay on the bed. In fact, she utilized the sign as a test to keep track of the condition of her eyesight until within less than a month of her death. One remarkable feature of the case is that the patient was able to ride out more or less during the greater part of her illness. Iodid of potash, which she had been taking, without any apparent benefit for a considerable length of time, was changed to mercurial inunctions, and was followed by a very marked improvement for about ten days, after which all treatment was without effect. Consequently on August 22 the mercury was discontinued.

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* Read before the Chicago Ophthalmological and Otological Society, Nov. 14, 1905.

On August 7 I found that the bitemporal hemianopsia was still present (there are only three cases recorded, I believe, in which bitemporal hemianopsia has disappeared, one by Treitel, one by Gehrung, and one by Würdemann), and, in addition to the previous hemianopsia, I also found the nasal field of the right eye entirely blind, except the part of the macular field supplied by the uncrossed fibers of the papillomacular bundle. This led me to believe that the tumor was developing more to the right side of the head at the back of the right orbit. She said the pain felt deep seated, accompanied by a dull headache, "a queerness," as she expressed it. Constant pains in the shoulders and arms were complained of. The pupils were much dilated, the left fundus, however, remaining normal in appearance, but the right disc was paler and slightly atrophic; the arteries were a little smaller, the veins were unchanged. The pulse varied from 90 to 110. The memory then began to fail and spells of despondency prevailed. To relieve the pain in the head, codein was administered with effect.

August 25 a serious disturbance of the respiration and heart occurred and also that of the temperature.

August 28 I found her much worse than on the 7th of the month. The lower temporal quadrant of the left retina was blind, in addition to the nasal half of the left retina; the pain had disappeared from the back of the right and was now located in back of the left orbit. The right eye had undergone a decided change for the better, for she then could see nine two-hundredths and the nasal field of vision was restored in the right eye. All of the symptoms of the disease were more acute and I was satisfied she had entered on the last stage.

August 30 she had a collapse, complained of increased pain in the head and was delirious most of the time, and by September 7 was in a state of stupor. From the 14th to the 17th she was unable to take any food owing to paralysis of the throat. The condition became pitiable, the face was very much swollen, the left eye being nearly closed. The sense of feeling, taste, smell and nearly all of sight and speech were lost. The temperature arose to 101 degrees

F., when she became violent, followed by a deep comatose state, death occurring on September 24.

Dr. McBarron and Dr. Larkin, pathologist of the College of Physicians and Surgeons in the city of New York, performed an autopsy and found the tumor of the pituitary body as large as an English walnut or small hen's egg, due to cystic degeneration. The sella turcica was greatly increased in size owing to the pressure of the cyst, the bones of the face measuring from an inch to an inch and a half more than when measured on August 7. The optic chiasm was flattened and pushed upward and forward.

Wilbrand, in Norris and Oliver's "System of Diseases of the Eye," Volume II, pages 276 and 277, states that "often temporal hemianopsia is caused by a tumor which has its seat in the region of the chiasm." In a collection of the literature on the subject up to the year 1880 he found tumors of the sella turcica fifteen times, of the hypophysis cerebri eleven times, of the chiasm five times, growing in the floor of the third ventricle five times, at the side and the base of the skull three times, and at the crista galli four times. Tubercles were demonstrated in the chiasm three times. Tumors may also press on the chiasm without producing actual disturbance of vision, as in a case of A. Levii.

Sell collected the cases from 1880 to 1897. The etiology of these appears to have been as follows: "Seven cases by trauma, twenty-five by tumors, six by tuberculous exudations or granulations, four by aneurisms, two by pressure from the third ventricle, two by periostitis, four by partial meningitis, sixteen by basilar gummatous meningitis and syphilitic disease of the chiasm, one by gummatous arteritis, one by hemorrhages into the chiasm, one by multiple sclerosis, and one by hyperplasia in elephantiasis."

"The Diseases of the Optic Chiasm," by Dr. Julien A. Gehrung, of New York City, reprinted from the *New York Eye and Ear Infirmary Reports,* January, 1904, which he, on a recent date, kindly sent me, contains an account of 102 cases and practically completes the literature on the subject up to date.

TRAUMATIC IRIDO-CYCLITIS, WITH PECULIAR CONJUNCTIVAL DISEASE. RECOVERY UNDER INJECTIONS OF TUBERCULIN.*

By S. D. Risley, A.M., M.D.

John Vinska, aged 31, a Russian by birth, with light hair, blue irides, a broad face and flat nose, an opaque skin; pale, flabby and indented tongue; a large head well sunk between broad muscular shoulders; clubbed finger ends and a few enlarged cervical glands, presented himself for treatment at the Wills Eye Hospital on July 5, 1905. He had just left the general hospital at Ashland, Pa., where he had been confined since March 29 under treatment for injuries involving the hands, face and eyes, caused by a premature blast in the anthracite coal mines. He was much disfigured by numerous small masses of coal imbedded in the skin of the face and brow.

The lids of both eyes were still swollen, the conjunctiva opaque and thickened, the cornea dotted by numerous gray spots or scars at the site of foreign bodies which had been removed or had escaped through ulceration. There was a free mucopurulent discharge, profuse lacrimation, great photophobia and severe pain in eyes and periorbital region. He could count fingers with difficulty at one foot when his back was turned to the light. He was treated as an outpatient until the 15th of August, but with no relief. In the meantime the bulbar conjunctiva became chemotic and three nodules formed in the ciliary region well back from the corneal limbus in the right eye and four in the left. These nodules were apparently subconjunctival elevations, almond-shaped but with well-defined apices. They could be discovered only by rolling the eyes well outward, inward or downward while the lids were forcibly held wide apart, and even then their posterior limits could not be uncovered. Atropia, subconjunctival salt injections, dionin, hot stupes, etc., together with general treatment directed to the improvement of his general health, proved unavailing and the eyes grew steadily worse. The nature of the affection remained in doubt. The local conditions were without parallel in my experience. A careful study of his family and personal history or of his present general condition threw no light on the cause or character of the local disease. He had lost some weight since his injury in March, but he had no cough or chest pains or physical signs of disease. His circulation was good, he had no albuminuria or glycosuria.

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* Presented to the Ophthalmic Section, College of Physicians of Philadelphia, 1905.

No blood count was made. He was admitted to the hospital on August 15, placed in bed and hot compresses applied locally. His temperature was taken three times daily for two days, but showed no variation from the normal. The pulse rate was 68 and respiration 20. On August 17 at 8 a. m. he received a hypodermatic injection, in the tissues of the arm, of 2 m. of Mulford's tuberculin in a syringe full of sterile water. There was no variation in his condition until noon on August 18, thirty-six hours after the injection, when the temperature rose to 99, pulse rate to 82 and respiration to 24. He complained of headache and pain in the back. There was marked reaction in the eyes. The photophobia increased, the conjunctiva became more edematous and there was a marked increase in the viscid mucopurulent discharge. The temperature, pulse and respiration were taken every three hours and rose steadily until at midnight on the 19th the temperature reached 104°, pulse 104 and respiration 30. On the 20th the temperature steadily subsided until at midnight it fell to 90°, pulse 70, respiration to 24. At 4 a. m. on the 21st the temperature again rose to 99° and at 8 p. m. to 100°, but at midnight had fallen to 98°, pulse to 70 and respiration to 20. Slight variations in temperature recurred until the 24th of August. The man's general appearance and demeanor now rapidly improved obviously through improved general nutrition. There was also the most signal and gratifying improvement in the ocular conditions. The pain and photophobia diminished, the nodules underlying or occupying the conjunctiva became smaller and the discharge from the conjunctival sac was markedly less. The improvement progressed steadily until the 7th of September, when he received a second injection of 2 m. at 8 a. m. The same constitutional reaction followed with even more marked local symptoms, but came on somewhat earlier, the rise in temperature beginning at 4 p. m. of the same day, September 7, reaching its maximum, 104°, at 4 p. m. on the 8th, accompanied by a pulse of 108 and respiration 40. He had pain in the spinal column extending from the cervical to the lumbar regions. The symptoms then steadily subsided until normal conditions were reached at 4 a. m. on September 11. The subsidence was accompanied by progressive improvement in both local and general conditions. At the morning treatment hour on September 13 he was able to open his eyes in the light for the first time without effort, said he could almost read the newspaper and asked for a speedy repetition of the injection.

On September 18, at 3:30 p. m., he received a third injection of 2 m. in the tissue of the left arm. The reaction was slight, consisting only of some headache and pain in the back, but there was only increased hyperemia of the conjunctiva, but no discharge. A week later, after all effect of the injection had passed away, he had an acute catarrhal conjunctivitis, for which no cause could be assigned, but was probably due to some extraneous infection in the ward, where numerous patients with mucopurulent affections were under treatment. This attack subsided in a few days under the usual local treatment.

On October 5 he received a fourth injection, which was increased to 3 m. There was no local reaction or elevation of temperature, but on the 6th and 7th he had some headache and spinal pain.

On the 8th he was comfortable, had a good appetite, no photophobia, could see the time on the ward clock and begged for his discharge from the hospital, which he received a week later. On November 1 he returned in good health, having resumed his work in the mines.

The acuity of vision was diminished by the scars on the cornea, but otherwise the eyes were in fairly healthy condition. I am much indebted to the resident surgeons at the Wills Hospital, Dr. Deems and Dr. Schlindwein, for their attention and assiduous care in recording the temperature, etc., during many days and nights while the patient was under observation.

In the absence of laboratory study, the exact nature of the ocular disease must remain in doubt, but its tubercular character is rendered probable by the reaction following the injections of tuberculin.

A SECOND CASE OF KERATITIS DISCIFORMIS; REPORT OF A CASE OF CORNEAL EROSION.*

By William Campbell Posey, M.D.

PHILADELPHIA.

At this year's January meeting of the Section, the writer presented a case of keratitis disciformis, the report of which was published in the May number of the *Ophthalmic Review.* During the past month he has had under observation, at the Wills Eye Hospital, a second case, whose history is as follows:

About one month previous to admission, the patient, a male, aged 34 years, was struck on the right eye by a stone. He consulted a physician in Trenton, who gave him drops and advised his stopping work for a time. This the patient refused to do, continuing his occupation of a stone cutter, notwithstanding that the eye was quite red and troublesome. The drops were employed, however, and after a time the acute inflammatory symptoms subsided, leaving the vision in the affected eye more or less obscured. Upon this account he came to the Wills Eye Hospital, reporting there on November 20. Inspection of the injured eye at that time revealed a grayish-white opacity superficially situated in the pupillary area of the cornea, of disc-like form, and with sharply defined edges (Fig. 1). The rest of the cornea was clear with the exception of a few dots and lines, which also seemed to be superficial and were most abundant in the lower quadrant of the cornea. The eye was quiet, and there were no traces of recent or old blood vessels upon it. The fundus was normal. When studied with the Zeiss corneal microscope, the opacity was found to be composed of a series of small rounded elevations, resembling minute blisters. Its edges were sharply defined, and with the center, were denser than the rest of the opacity. The symmetrical disc-like form of the opacity was broken at its temporal border, for at this point there was a broad prolongation jutting several mm. from it, whose edges were so well defined and limited from the surrounding corneal tissue. An ointment composed of atropin, bichlorid of mercury (in strengths varying from 1 to 5,000 to 1 to 200) and vaseline, was prescribed and was rubbed into the eye twice daily, without affecting the character of the opacity to the slightest degree.

In comparing the history of the case just cited with the account of keratitis disciformis given by Fuchs, it appears that this case, like that of the first observed by the writer, presented all of the characteristics noted by that author, with the exception of its position in the cornea, for while Fuchs described the opacity as situated in the central or posterior portion of that membrane, in both cases observed by the writer the opacity was quite superficial. In the first case the disc-like area was noted as being in the epithelial and subepithelial tissues, with some opacities extending posteriorly into the substantia propia; while in the case which has just been presented, the parenchyma of the cornea is clear, the opacity being apparently situated in the epithelial tissues alone. Despite its superficial position, however, the striking disc-like form of the opacity in both cases, and the history of its origin, must render the inclusion of both under this rare form of keratitis as justifiable.

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* Read at the December, 1905, meeting of the Ophthalmological Section of the College of Physicians, Philadelphia.

In both cases, the corneal opacities represent the final product and the last stage of the inflammatory process, and it is possible, indeed the appearance of the opacities in the first case under the epithelial tissues renders such an assumption more than likely, that at the time of acute inflammation, the parenchyma of the cornea was affected. In any event, the classification of keratitis disciformis among the parenchymatous affections of the cornea has now been placed beyond doubt, not only by Fuchs, who originally described the disease, but also by recent clinical and experimental investigations by Schirmer,[1] and by the pathologic study of an eye the seat of keratitis disciformis by Meller,[2] one of Fuch's assistants. Schirmer, whose observations were carried out on human eyes accidentally infected with vaccine virus, and supplemented by inoculation of animals' eyes with the same virus, not only established the connection of keratitis disciformis with the corneal involvement in vaccine cases, but also traced the changes in the cornea from the time of first infection. Thus, it was observed that shortly after the virus was injected, the cornea became superficially hazy in a small disc-like area, with sharply defined edges; the center of the opacity, which marked the site of entrance of the virus into the eye being denser than elsewhere. After a time, however, radiating lines and circles concentric to the disc appeared in the deeper layers of the cornea, and the superficial changes became less prominent, the epithelium restoring itself. Considerable opacity of the cornea always persisted. As in Fuchs' description of the disease, Schirmer found that uveal complications may occur, though rarely.

Meller's observations were based upon the histologic examination of an eye which had presented clinically the aspect of a diffuse parenchymatous keratitis, with a disc-like opacity in the central and deeper layers of the cornea. Secondary glaucomatous symptoms intervened as a consequence of a complicating uveitis, and a shallow ulcer appeared in the center of the cornea. Later, iridocyclitis rendered the enucleation of the globe necessary. The sections which were made through the portions of the globe which included the opacity, showed that the center of the membrane was the seat of an infiltrated area, which extended anteriorly and posteriorly to Bowman's and Descemet's membrane, respectively. The epithelium was infiltrated with free round cells, and at the point nearest to the area of infiltration in the center of the cornea this layer was lifted up and was reduced to several layers only. Bowman's membrane was everywhere normal; Descemet's membrane, on the other hand, was thrown into numerous folds, and closely adherent to it posteriorly there was a thick exudation of fibrin, which took the form of a disc. These observations confirm the clinical studies of Schirmer and indicate that the changes which occur in the cornea in cases of keratitis disciformis are the result of infection and consist in an inflammatory exudation which spreads from the site of the entrance of the bacteria in the superficial layers of the cornea to the surrounding parenchyma in all directions, finally

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[1] Archiv f. Ophth., lix, p. 133.

[2] Klinische Monats. f. Augenh., October, 1905.

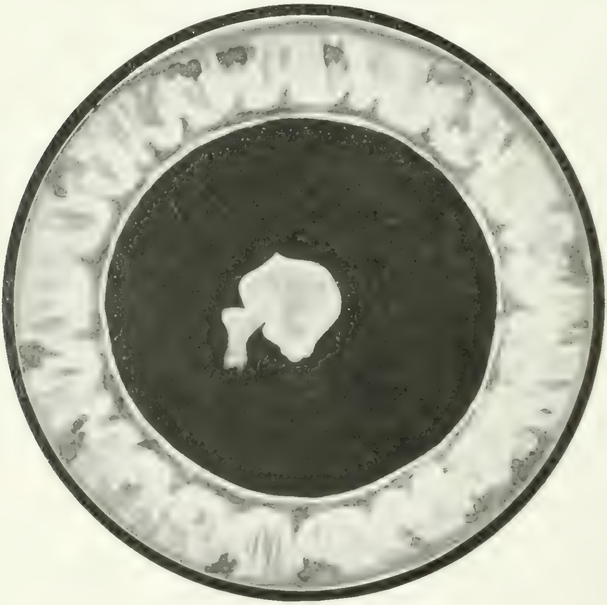

Fig. 1.—Keratitis Disciformis.

occasioning a disc-like area with saturated edges in the deeper layers of the cornea.

Meller believes that the tendency which the disease first manifests to spread in all directions ceases very rapidly, the inflammatory process soon passing into a total necrosis of the infiltrated area. His views, therefore, differ from those of Peters,[3] who holds that this type of corneal inflammation results, not from a primary necrosis of the parenchyma of the cornea, but from a kind of necrobiosis of the tissues, as a consequence of disturbed innervation. This conclusion has recently been confirmed by Hadano,[4] one of Peters' pupils, for in a microscopic examination which was made of the opaque disc after its removal by a curette a more or less homonymous mass was revealed, with large bundles of loose tissue interwoven through it. Not the slightest sign of inflammatory infiltration could be discovered, the nuclei being but few in the periphery and entirely absent in the central zone. Micro-organisms were absent.

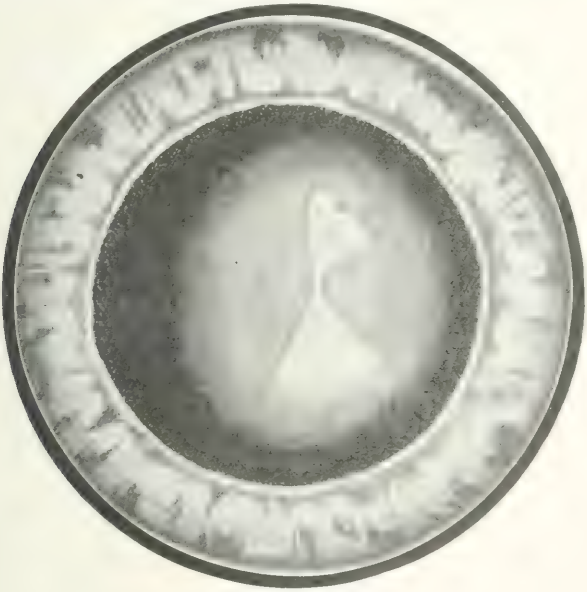

Fig. 2.—Corneal Erosion.

In addition to these observations on the pathology of keratitis disciformis, Peters has pointed out the connection which this form of corneal inflammation has with corneal erosions. In order that the Fellows might judge for themselves of the association between these two forms of corneal involvement, the writer presents a case of the latter type of disease, which happens to be under treatment at the Wills Eye Hospital at this time. In this case, a machinist, aged 33, the primary inflammation of the cornea followed a burn received from a match ten years ago. This injury was treated at Moorfields Eye Hospital in London, the inflammation subsiding after a few weeks. Since that time, however, there have been recurrences of the acute symptoms during the winter months, the present attack being of three weeks' standing. When first seen, three weeks ago, there were all the signs of a fresh superficial ulcerative keratitis, apparently engrafted on an old maculated condition of the cornea. With the partial subsidence of the inflammation, however, it became possible to study the corneal condition more carefully and to remark the peculiar form of the opacity. This, as is well shown by the sketch (Fig. 2) which was kindly made for me by my assistant, Dr. W. C. Swindells, is made up of a central dense grayish-white haze, composed apparently of small dried-up vesicles. The opacity is hour-glass in form and is surrounded by a fine whitish stippling, to the nasal side, but externally by a series of concentric lines. All the opacities are superficial and with the loup may be seen to lie in the epithelial and immediate subepithelial tissues. Peters explains the connection between keratitis disciformis and corneal erosion, and, indeed, with ulcus serpens as well, by making all three dependent on a nervous lesion affecting the corneal epithelium, as a result of which an edema of the corneal tissue occurs, whereby the epithelium is stripped up in some cases, while in others the deeper tissues of the cornea are involved by infiltration.

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[3] Archiv. f. Ophth., lvii. 2. p. 93.

[4] Zeitsch. f. Augenh., x. 6. p. 500.

Although the shape which the corneal haze has assumed in this case is not that seen in keratitis disciformis, nevertheless the opacity presents so many characteristics in common with those exhibited in both of the cases of keratitis disciformis which the writer has reported that a connection between both processes seems not unlikely. With the association of these conditions in mind, it will be interesting and instructive to note the corneal changes in all future cases of relapsing keratitis, with the greatest care, and to study the various stages of the inflammation with high magnifying power.

A CASE OF FILAMENTOUS KERATITIS.

By W. Zentmayer, M.D.

and

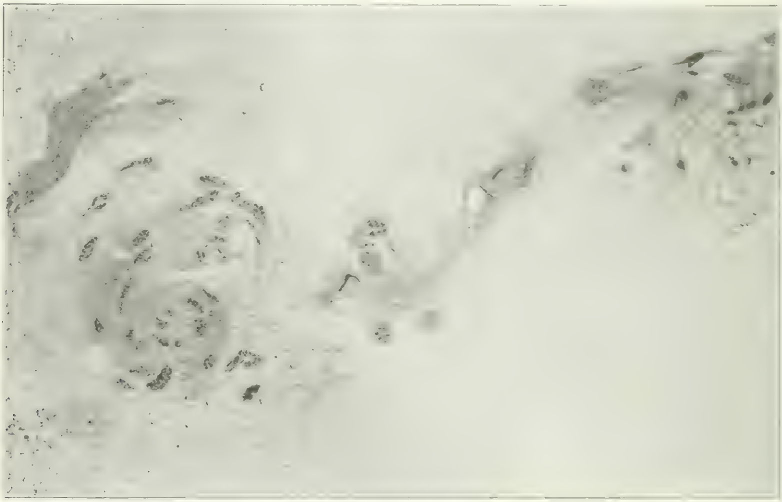
H. G. Goldberg, M.D.

PHILADELPHIA.

The patient who presented this rare corneal condition was 35 years of age, married and had borne three children, two of whom are living and healthy and one dead of pneumonia. She has an infant not nursing. She has had no illness since puberty, but three years ago had glands removed from the cervical region. The patient thinks that the condition was a manifestation of scrofula. The eyes were well until 3½ months ago, when the left began to water and pain and later this was accompanied by severe pain in left side of the head. She was apparently in good health at the time of the onset, but recently she has had slight fever with labial herpes. The affected eye has converged since childhood and has never possessed useful vision. When first seen in April, 1904, the cornea, by naked eye examination, appeared to be covered over its upper half by many small vesicles and almost as many small threads. Under the loup these apparent vesicles were resolved into transparent droplets attached to the cornea by short pedicles. In the lower part of the cornea there were two small epithelial ulcers which stained with fluorescin. There was much photophobia and slight pericorneal injection. At subsequent visits it was determined that the filaments and droplets were different stages of the same process, the pedicles lengthening so that, in some instances, the bulbous terminal was several mm. removed from the point of attachment of the filament.

The treatment at first consisted in the use of unirritating solutions and atropin, with the internal use of tonics, alteratives and aspyrin to relieve pain. After several weeks' trial this was abandoned and almost everything that could be suggested, including pericorneal cauterization, advised by Mr. Maitland Ramsay, who saw the case, was tried without benefit. The patient earnestly begged to have the eye removed because of the intense neuralgia. Finally, after three months' treatment, under the use of strong iodoform ointment, a wash of ammonium chlorid (gr. v-℥i) and a compress bandage, the epithelium began to be reproduced in a normal manner and the eye has since remained quiet. The frequency with which filamentous keratitis occurs varies with different localities. Hess places it at 5:30,000. Others as frequently as 1:250. Mr. Ramsay informed me that he meets with it quite frequently.

In many thousand eye cases, I have met with it but once. C. Hess[1] gives the following etiologic classification: 1. Idiopathic. 2. After superficial traumatism. 3. After wearing warm compresses of corrosive sublimate or boric acid. He concludes that in filamentous keratitis the corneal epithelium plays an important part in the formation of the filament. Its origin is favored by a peculiar disease of the epithelium. It is not impossible that the subepithelial tissues take part in the formation of the filament or that fibrin or mucous threads could become connected with the corneal filament. but both of these must have but little to do with the origin of the filament.



Terminal portion of a filament under high power

HISTOLOGIC STUDY OF DR. GOLDBERG.

Specimens stained with analine water, gentian violet and counterstained with aqueous fuchsin.

Under the 1/12 oil immersion objective it presents the following appearance:

A long band or filament, 5 or 6 fields in length, of faintly staining fasciculated material, having two distinct extremities. The long body of the filament is made up of regular layers of cells running the entire length of the filament. These cells stain faint blue, are nucleated and resemble the fibers of the crystalline lens. The nuclei are flat and elongated and take the nuclear stain distinctly. At one extremity they terminate by whirling about in the form of a knob or club-shaped bulb, when they form concentric layers, the nuclei following the general course of the fibers. Here also they resemble the whirling of the cells at the equator of the lens. Occupying the center of this bulb is a large bluish-black mass that takes the nuclear stain, surrounded by a halo of finer granules presenting the so-called raked field appearance. These granules stain bluish black and are probably the components of the larger mass. The mass sends out a slender twisted tail into the main body of the filament, which is several field diameters in length. It merges into the bluish-black mass as though it were a part of it and is markedly twisted on itself. Surrounding the large mass and still within the elongated cellular covering are seen large polyhedral cells with a faintly granular protoplasm and containing two or more irregular granular nuclei. Some of these cells have lost their walls, when their contents appear to contribute to the formation of the large mass already described. In fact, so pronounced is this appearance that it suggests the theory that the mass is made up of a conglomeration of degenerated nuclei, as though the cells at this point had reached their final degenerative stage and, breaking down, formed this large bluish-black mass.

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[1] Archiv. f. Augenh., vol. xxxix, No. 2.

In further support of this, not only is the detritus of the nuclei found in cell walls and lying about free, but whole nuclei are seen that apparently have escaped from the cell and differ from the nuclei of the long cells, in that many are normal in outline and none elongated excessively. In the course of the filament and scattered at random the following cells are seen: 1. Perfectly formed epithelial cells, with degenerated nuclei. 2. Nuclear detritis. 3. Greenish-black pigment. 4. A large globular cell containing a number of large, thick, short, positive bacilli, with rounded extremities, and occurring in much greater numbers, and associated with them is a much smaller organism, a positive diplococcus, with barely perceptible separation, being difficult to distinguish from a bacillus. 5. Small, bright, orange-colored amorphous masses. 6. Colorless crystalline bodies resembling fat globules. The other extremity of the filament, probably that which has been attached to the cornea, has not the concentric form of the free end, it is broad, contains a granular material giving the fibrin reaction, nuclear detritus, perfectly formed epithelial cells with degenerated nuclei, polymorphonuclear leucocytes, and a distinct deeply-staining fibrillar substance giving the fibrin reaction.

DANGERS OF COMMON DRUGS AS SEEN BY THE OPHTHALMOLOGIST.

By Edmond E. Blaauw, M.D.

BUFFALO, N. Y.

Daily contact with danger breeds contempt; so the daily use of medicines, and from which we see the therapeutic effects which leads us to forget that some dangerous result might be inflicted. The old Greeks used one word (φαρμακον) to designate a drug as well as a poison. Our knowledge, in this general sense, has not been much enlarged. We consider to-day that there exists no special difference between a food, a drug or a poison. for, in administration, the presence of the substance in the living body produces chemical processes, which, in turn, produce the changes. According as these changes are produced, so that the normal function of one or more parts of the organism are maintained, or that the disturbed function is repaired, or that the function is lost temporarily or forever, so one and the same material will appear as a food, a drug or a poison.

Most poisons and drugs are chemical substances, alien to the animal organism. To differentiate between poisons and drugs, on the one side, and foods, on the other, we have to demonstrate the harmlessness, the non-poisonous effect of the normal chemical products of the living body and of our food. This, however, has never been done. Peptones and hemoglobin, salts of chalk and iron, combinations of potassium and magnesium, glycerin and common salt, these all show poisonous effects in certain quantities, or under certain circumstances. From the other side it can not be contradicted that, under certain circumstances, substances alien to the body can be of service in maintaining the normal functions. The best demonstration that a substance is a food is the fact that, withholding it, endangers life. Take away from the chronic alcoholist, the morphinist, the arsenic-eater, and such, the substance originally alien to his body, but to which he accustomed himself, as the normal man to his daily bread, a series of symptoms arises which endangers life. So serious are these that they are described as inanition symptoms. One of the most pregnant examples in this connection is given us by common salt. It is an indispensable ingredient of the animal body, as Professor Foster has shown in his experiments regarding chlornatrium-hunger. Salt is a safe drug used either as a digestive agent, a skin excitant or a diuretic, but, at the same time, if taken into the stomach in a large dose, it acts as a poison, or, if brought into the circulation in sufficient quantities, through its action on the central nervous system, it will cause death.[1]

From this almost too short an exposition, we deduct the following definition as the most true and simple: A medicine is a chemical substance or a combination of chemical substances which is used with the intention to cure. Inseparable to the medicament, its action is combined with a series of processes, started in one or more organs of the living body through the presence of this substance. In other words, we have to deal here with the reaction of the living body against an introduced substance resulting from the chemical affinity between one or more parts of the organism and the substance. This reaction is not the same for different individuals. When undesirable symptoms arise we speak of "idiosyncrasy," a term which every physician understands, but the explanation of which would take a good while. It is one of those glittering words covering our limitations. The class of cases I will present to you may be explained chiefly by this term. The drugs belong to varying classes; we will deal with antipyretics, disinfectants, antiparasitics, alteratives and others, but as regards uncommon symptoms produced by these medicaments I shall limit myself closely to the symptoms as the ophthalmologist sees them.

The best known of the disinfectants is iodoform. It was discovered by Serullas in 1822, used as a therapeutic agent by Bouchardat and Glover in 1836. Its history is interesting, but would detain us too long. Only I would like to remind you that, in 1880, Mosetig Moorhoff and, in 1881, Mikulicz and König advocated it for antiseptic dressings. Chr. Heyn and Thorkild Rovsing demonstrated that it did not possess any bactericidal properties, and that the pus-producing cocci in pure cultures, when mixed with iodoform, grew just as well. They proclaimed it valueless as an antiseptic. They humorously asked if it ought not to be disinfected before using. The action of iodoform depends on the slowly splitting off of the iodin molecule, which is the acting disinfectant, and which occurs everywhere in the animal body; it oxydizes easily oxydizable substances *in statu nascenti*, and of its peculiar physical properties, namely, its powder form and its fitness for absorption, give it great value as a protector from the outer air. The poisonous effect of iodoform depends chiefly on the free-coming iodin and its blending with alkalies, splitting up of water, oxydation, etc. The quantity used, the appropriateness of the place chosen for its use, the absorption, the power of resistance of the individual some times make iodoform a poison, whereas in others it is a medicant. Injections of iodoform emulsions, application of the powder on wounds, as well as internally in pills, might be followed by unwished-for symptoms in the eyes. In the cases of ocular poisoning, iodoform was used for at least three months. In one exception, 65 grams were administered internally in only 14 days (Priestley Smith). However, in all cases the simple stopping of the drug was followed by a return of vision, which in a few cases was reported as normal (Russell), once it was 2/3 and ½ (Hutchinson), once ½ (Hirschberg, who reported the first case in 1882), once 6/8 (Priestley Smith). Valude and Terson reported cases where a connection of the failing sight and the use of iodoform—for burns—was not recognized, and atrophy of the optic nerve resulted with some restoration of vision. Some of the iodoform is absorbed unchanged, for the nervous (cerebral) symptoms are not produced by iodin or iodids. We notice failing sight, central color scotoma and normal outer boundaries of the visual field, the temporal side of the pupil is often paler in these cases; symptoms we group under the title of retrobulbar neuritis. Retinal hemorrhages, with or without a neuro-retinitis, are observed occasionally (Trousseau, de Vos). As far as age is mentioned, it ranges between 9 and 43 years. It seems that the volatile products of the iodoform (acetylene, C_2H_2), or the resorbed iodoform as such, must be made accountable for the poisonous symptoms (Stokvis).

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[1] See American Medicine, No. 27, 1905, C. Combs, M.D., "A Case of Fatal Poisoning with Natrium Chlorid."

Two other disinfectants (antiseptica organica, Stokvis) very largely used are β-naphthol and naphthalin. In 1842 Dupasquier and Emey introduced the latter into medical practice, to be soon forgotten and reintroduced by Rossbach. It is used externally and internally. Its value as intestinal antiseptic depends on the continuous spitting off of small quantities of α- and β-naphthol.

Naphthalin (C_{10} H_8) has been often used for experimental purposes. Ingestion first produces changes in the retina and corpus vitreum in the form of small exudates and crystalline precipitations and consecutively the lens becomes opaque (cataract) and the chorioidal tract shows important changes, as hemorrhages in the ciliary processes and fibrinous exudates in the chorioid. Changes in the superficial layers of the cornea, chiefly within the ocular cleft, are found in workmen who handle this substance in the factories. A. Lezenius has described the first naphthalin-cataract in man (1903). A man 36 years old took 5 grams of not-cehmically pure naphthalin in a castor-oil emulsion within thirteen hours and became entirely amblyopic nine hours later. The lens showed points and diffuse opacities in the perinuclear zone, the retinal vessels were constricted with a paler coloring of the temporal half of the papilla and the field of vision concentrically contracted. (Vision: counting fingers at 1.50.)

Schiele also published a case where the lens in both eyes became opaque and had to be extracted after the patient had taken 5 grams naphthalin in 200 gm. oleum ricini for some bowel trouble. Dr. J. van der Hoeve reported some cases in which β-naphthol in therapeutic doses affected the retina.

Case 1.—An 11-year-old girl, whom he well knew, applied during sixteen days a 10 per cent. β-naphthol salve for an exanthema of the scalp. This produced some ten grayish-white foci in the retina. The entire retina had become slightly opaque, so that some vessels were obscured at a slight distance from the optic disc. The lenses showed no changes. Five days later, after stopping the use of the salve, the general opacity had cleared.

Case 2.—A 21-year-old lady rubbed her scalp for a fortnight with a 1 per cent. β-naphthol salve. v. d. Hoeve found a milky opacity of the retina and a spoke in the posterior part of the lens cortex, which later disappeared.

Case 3.—A 28-year-old lady, during a period of sixteen weeks took 4 grams of benzonaphthol daily internally. The retinæ were slightly opaque, optic discs somewhat hyperemic. The fundus was full of yellowish-white spots on an orange field.

Case 4.—A 40-year-old man showed a double progressive cataract, where the only cause which could be found was the treatment a half year previous, during a period of two weeks, of the face and neck with a 3 per cent. of β-naphthol salve. The naphthalin and the benzonaphthol seem to split off α- and β-naphthol within the digestive tract.

To attack some larger intestinal parasites santonin is sometimes used. Santonin is a near relative of naphthalin (hexahydro-naphthalin, Cannizaro). In small doses showing no reaction in the rest of the body it will produce xanthopsia. The explanation must be sought in the easy diffusion of the color, as formed by the santonin in its passage through the body. This is to be compared with the yellow vision in jaundice, which also depends on a change of the color of the refracting media of the eye. The yellow vision is generally preceded by violent vision. This last is considered dependent upon a passing excitation of those retinal elements, which perceive the violet according to the Young-Helmholtz theory. This excitation is followed by depression; the phase of yellow vision corresponds with this depression. This theory also transfers the color seeing to the periphery, and is in opposition to the diffusion theory, which can not be accepted, as it has been impossible to demonstrate it objectively either with the ophthalmoscope with polarized light.

Blinn, in 1887, claimed to have observed temporary amblyopia and even blindness without ophthalmoscopic changes. In serious poisoning large pupils were found, even with loss of the pupillary reaction; also disturbances in the ocular-muscles dependent on the cerebral innervation. Inouye, in connection with yellow vision, observed a monocular retrobulbar neuritis with relative scotoma for colors, where the vision remained 6/8. Uhthoff doubts that this is a case of a really anatomic optic affection through the action of santonin.

Two other anthelminthics are cortex granatorum and rhizoma filicis maris.

Filix mas is chiefly used as an ethereal extract, the poisonous effect of which is heightened by the simultaneous use of Ol. Ricini. Filicic acid is the therapeutic as well as the poisonous substance, although Walko lately (1889) accused aspidin and aspidinin, because the filicic acid is chiefly excreted unchanged. The toxic dose is very variable, doses of 20 to 45 grams were harmless in an anchylostoma epidemic (St. Gotthard's tunnel), while Bokai becomes very careful with 4 grams. Blindness comes on twenty-four hours to twelve days after administration. Thirty-two per cent. of the poisoned cases showed ocular symptoms (Katayama and Okamoto). Sidler-Huguenin collected 78 cases from the literature of grave and moderate poisoning, of which 12 died, 18 became blind in both eyes, 15 in one eye; 4 cases showed in both eyes diminished vision, one in one eye; one patient was temporarily amblyopic, while 3 showed this only with the one eye. Nieden collected 81 cases of intoxication after the use of extractum filicis maris rec. par. for ankylostomiasis; of these 12 (14.8 per cent.) were fatal; 47 (58.3 per cent.) of these 81 cases showed ocular symptoms; 40.5 per cent. blindness in both eyes; 32 per cent. amauroses in one eye; 7 times diminution of vision in both eyes and 4 times in one eye, while 2 cases showed passing trouble.

Because we see so often the affection in one eye, and although in many cases it started in both eyes, we may conclude that we have to deal with a peripherical disease. The cases which show a permanent defect of vision have an atrophically colored pupil and contracted retinal vessels. Experiments on animals demonstrated changes in the ganglion and inner nuclear layer, from where degeneration and atrophy of the nerve fibers can follow (Birch-Hirschfeld). Nüel, however, considers the disturbance of vision primarily due to a retrobulbar parenchymatous neuritis, simultaneous with very marked degenerative symptoms in the ganglion cells of the retina. While Masius and Mahaim think that the changes of the blood vessels, chiefly of the capillaria (proliferation of nuclei and infiltration of cells) are the primary cause and the degeneration of the nerve fibers depend thereon, still later the retina becomes affected.

Cortex granati, used in a maceration of the root, caused in one known case a decided diminution of vision. The fifth day after its administration the patient became amblyopic, the vision later became better, but the papillæ N. Opt. remained atrophic with slight opacity, the field of vision was narrowed for white and colors, the retinal vessels were smaller.

Cases are known where the simultaneous use of extract corticis granati with felix mas was very deleterious (Bayer, Grosz). Enlarged pupils with a slow reaction, which have been declared to depend on excitation of the sympatheticus, which causes an excitation of the dilatator pupillæ, have been found to occur as happens with administration of extract filicis.

The alteratives belong to a group of drugs, named from their therapeutic purpose, that is to restore the normal condition and the normal function in tissues which are the seat of chronic nutrient disturbances and inflammatory processes and therefore do not functionate well. To those who are always looking for the "why," I want to quote Wood's simile: "It is absurd to gaze into mid-air for the crowning spire before the foundation stones of the temple are laid." Still we might get a peep in Nature's workshop; anyhow, we might acquire a more satisfactory although limited insight. We know that true alteratives, such as the very much diluted mercurial and arsenious-acid solutions make the saccharomyces functionate more actively, as is shown through their multiplication and the greater quantity of sugar produced; and that the arsenic and phosphorous given in very small quantities to newly born individuals increase the formation of bone and make the whole skeleton stronger. These specific actions remind us of the action of small quantities of the katalysators, under which the enzymes might be grouped.

The true alteratives, which show eye symptoms in toxic cases, are phosphorus, arsenic and mercury.

Although the therapeutic effects which we get from phosphorus may be gotten with the same certainty and with less danger from other less poisonous remedies, still it is recommended for many different conditions. In case of phosphorous poisoning icteric coloring of the conjunctiva with general jaundice has been seen. Niederhausen found hemorrhages in the retina with a greater filling of the blood vessels. It is most probable that so little is known here, because it so seldom has been looked for. Experiments in animals showed interesting changes in the retina, the most important of which are decay of the layer of the rods and cones, degeneration of the ganglion cells of the retina. Uhthoff found thrombosis of a branch of the arteria centralis retinæ with the corresponding loss of a part of the field of vision, where an attempt of self-destruction with matches had preceded and no other etiologic factors could be found. In five cases of multiple neuritis in phosphorous poisoning, Henschen found once pain in the right eye and its supra-orbital region, that is, affection of the *N. trigeminus.*

The most important change, which is reported from arsenic poisoning, is the inflammation of the optic nerve. Liebrecht reported a case where a relative central scotoma was present, so that a partial retrobulbar neuritis must be accepted. Temporary amblyopia is sometimes noticed. Edema of the eyelids and conjunctiva are found, as is well known in those cases of beer poisoning, reported from England (1900).

The third and most employed alterative, the mercury, has often been falsely accused of doing harm, but till to-day no case is known where the ophthalmologist can trace the damage to the mercury.

The antipyretics are a class of remedies of which it would be time wasted to say something from the pharmacologic standpoint. The most known and used is certainly quinin, and one of which the damages done to the vision are well known to every busy practitioner, while de Schweinitz states: "The dose which may cause blindness varies from 15 grains to 1 ounce in twenty-four hours." One single dose has been found sufficient. Already in the first half of the past century it was known that quinin could influence the vision, but the ophthalmoscope (invented in 1851) first revealed the lesions. Gowers found that the toxic dose was from 5 grams to 78 grams within three days. But we have to accept for many cases an idiosyncrasy, and a general debility, cachexia, a. s. must certainly predispose. However healthy, sturdy persons might become influenced as experiments of the authors on themselves have shown (Giacomini, 1841; Barabaschew, 1891). In comparison of the quinin used in malarial regions, the damage done to the visual organ is rare, so that it will not prevent the use in cases required, but will make us careful when prescribing.

The trouble often starts with a double blindness, which is conbined with other intoxication symptoms. After some time the vision slowly returns. This may be hours or days, and also months. The central vision first returns, while the peripherical part of the field of vision is lost. This narrowing of the field is generally concentric. With the loss of vision goes the loss of color sensation, which is restored as the central vision returns. With the ophthalmoscope we see clearly defined symptoms of retinal ischemia (diffuse whitish opacity of the retina in the back part of the fundus with a cherry-colored red spot in the foveal region). A pronounced narrowing of the vessels with a white pupil is very soon found. This diminution in the size of the vessels may even progress to total obliteration. This narrowing follows diminution of blood pressure, and depends on a changed heart action (slower and weaker). The vessels undergo anatomic changes later (thickening of the walls, endovasculitis, etc.). So in the more pronounced cases we will find more or less marked degeneration of the retina, optic nerve and tract. Experimentators found degeneration of the ganglion cells and inner nuclear layer consecutive to a serous exudation rich in albumen in the layer of the nerve fibers. The lessened blood supply, that is of nutrient material in the first place and next to this the changed quality of the food, must be responsible for these changes.

Vernes found also experimentally in dogs two days after poisoning degeneration in the optic nerve which could be followed till in the primary ganglia. Some hours after the beginning of the amaurose chromatolyse is found in the nerve cells of the occipital lobe. Some symptoms of the poisoning show similarity with excitation—symptoms of the sympathetic, and the influence of the sympathetic could be demonstrated in one-sided extirpation.[2]

The changes as seen with the ophthalmoscope, the clinical picture, the changes as found with the microscope, concurring with the report of two cases of monocular blindness (v. Graefe, Westhoff) demonstrate the peripheral origin of the visual symptoms.

Here I think it a fit place to report a clinical history, the etiology of which is, perhaps, open to attack.

In April, 1899, Mrs. A. consulted me, complaining that she had much difficulty going around as soon as it became dark and also of loss of vision. The central vision was 5/18 even after correction of the refraction. The papillæ were pale, the retinal vessels were small, the periphery of the retina was poor in vessels. The fundus looked slightly milky. The field of vision was 10 degrees concentric to the point of observation, except downward, where it was 15 degrees. The only change after treatment (iodin of potassium with protoiod. of mercury as alterative) was an increase of the central vision till vision 5/6 and a small enlargement of the field of vision during two years of observation.

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[2] Zeitschr. f. Augenh., vol. xiv, pp. 337-339.

It is not the place here to discuss differential diagnosis, but I like to present this case as more or less a case of *form frustè* of quinin poisoning, and well on the following grounds: The regularly concentric fields of vision, with narrowed retinal vessels and pale optic nerve. Hemeralopia may be caused by these narrow vessels, but may also depend on narrowed chorioidal vessels (as de Bono found), and can be a direct result from the quinin (Panas reports a slower movement of the retinal pigment). I could follow the course of the disease, and last but not least the preceding history. My patient was a lady with comfortable means, not strongly built, who bore a baby some two years previous. Some five weeks after the birth of the child chills and fever developed, for which she was treated during some six months with 10 capsules of 5 grains each of quinin, on the ground that she had malaria. Four months later she began complaining that she saw her sewing blurred; some six months later in the winter she slowly developed hemeralopia. As you see, I have not a stringent proof of my surmise, but I mention this case because when the general practitioner knows what might happen, when quinin is given to a predisposed constitution these cases might be found more often and because sometimes quinin is recommended in cases of hemeralopia.

Another antipyretic, which found specific application as well as quinin, is the salicylate of soda and salicylic acid. The visual disturbances which they make have a great similarity to those of quinin, as well as the general intoxication symptoms, and more particularly the auditory ones. However, they do not happen so often, neither are they so severe. Often we find visual disturbances without ophthalmoscopic changes. The prognosis is far more favorable, as the vision seems to become normal again.

An antirheumatic aspirin, a derivative from the salicylates, has made a well-deserved name. We do not wonder when we find that sometimes an idiosyncrasy against it is found, as very pronounced swelling of the eyelids. Dr. Otto[3] reports the second case, where 2 grams caused general intoxication symptoms. Hirschberg, a year previous, saw a patient in whom 1 gram occasioned urticaria-like symptoms. Edema of the eyelids, even combined with secretion, is sometimes found with a quinin exanthem. These lid and conjunctival symptoms are often found after the use of antipyrin, even after 1-gram doses. Seldom more severe trouble was noticed. Once a passing amaurosis, twice a diminution of the vision was found after small doses.

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[3] Deutsch. med. Woch., S. of Feb. 12. 1903

Hilbert reported a case where 3 grams antifebrin taken to relieve head pain caused amblyopia with pronounced contraction of the visual field, pale discs and shrinking of the retinal blood vessels. In severe cases of poisoning with these antipyretics very often an enlargement of the pupils is found; sometimes the pupillary reaction is lost.

I call your attention to a few additional remedies which have no particular connection with each other.

Who wishes to read a panygeric on the therapeutic applications of *Ergot* may take the number of March 21, 1903, of *The Journal* A. M. A., where he will find a paper: "Some New and Unusual Therapeutic Applications of Ergot," by A. T. Livingston, M.D. Ergotin or secale cornutum belongs to the Angiotonica. These are internal styptics. Under the distinctly dependent ocular symptoms we find the formation of cataract through ergotism. It seems the convulsions are here the primary condition, as is more often observed in infancy with rickets, we see sometimes this connection, as also in epilepsy. However, de Wecker and others see the cause in contraction of the arterial blood vessels of the anterior half of the eye. Schneider published in the *Müenchener Mediz. Wochenschrift,* 1902, a case of double internal ophthalmoplegia. The patient daily used 0.2 secale extract for some time, and the condition improved after stopping the medicine.

According to Orlow,[4] the cataract is the sequence of a disturbance in the nutrition of the lens, which follows the specific change of the epithelial covering of the ciliary body and posterior surface of the iris. The ganglia cells in the retina and the nerve fibers in the optic nerve can become primarily affected.

The leaves of the datura strammonium are often smoked against asthma. Two cases (one by Fuchs in his handbook) are reported, where the patients acquired a central scotoma, as f. i. in tobacco-amblyopia. Cerillo in his case later found a partial atrophic optic nerve, indicating an ended retrobulbar neuritis.

Chloral (invented by Justus von Liebig, the hundredth birthday of whom was celebrated May 12, 1903) is often used as an hypnoticum, but it is dangerous to leave it in the hands of the patient, as is too well known (D. G. Rosetti). The pupils become narrow. Mittendorf (1889) has reported a case of amblyopia after a six months' use of 4 grams daily, which receded after stopping with the drug. Often a swelling of the eyelids with inflammation of the conjunctiva and surrounding skin has been noticed after prolonged use. This similar facial edema, so that the eyes could not be opened, was observed after the use of codein. (Walters at Rostock: A patient took within twenty-four hours 3—10 mgr. codein).

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[4] Neurol. Westnik, vols. xi, xii,.

Thyreoidin is one of the newer remedies which has a chance to become a permanent member of our medicine chest. The indications for its use have been widened within the last years, so that we not only use it in affections of the thyroid gland, but also in combating fatness, psoriasis, dysmenorrhea, etc.[5] But we must be careful. Coppez in Bruxelles has reported five cases where, after the use of thyreoidin for a longer period of time the vision diminished even to one-tenth of the normal value, compared with central scotoma. He found hyperemic papillæ, the veins enlarged and more tortuous. The prognosis is favorable, as the vision returns when the drug is discontinued.

Aalbertsburg[6] reported a case of optic neuritis after the use of *Thyroid Powder.* Birch-Hirschfeld and Inouye experimented on dogs and found that primarily the ganglion cells in the retina became affected, followed by a secondary degeneration of the optic nerve.[7]

I am now at the end of those drugs which might and do produce harm to the visual organ. You all know those remedies which, taken internally, might change the pupillary width, as atropin and gelsemium, which produce mydriasis. And to be more or less complete I have to add those drugs, which can do harm, as local application of nitrate of silver, which produces argyrosis of the conjunctiva in the long run, lead solutions, which must be shunned when the epithelium of the cornea is defective, and calomel, which would cauterize locally when the patient is taking iodid of potash internally.

I have tried to be brief; the subject is somewhat dry without clinical evidence, still it might not be out of place to be reminded that a viper often lurks in the grass, where it is least suspected. Let us make up our minds to be careful and scientific in making our diagnosis, so that we can prescribe our remedies as conscientiously as we theoretically wish, and let us try to sharpen our sense of observation. More cases may then be reported which might fall within the compass of this subject.

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[5] J. Coplin Stinson, Am. Jour. of Obst. and Gyn., July, 1902, in painful menstruation.

[6] See Abstract in Annals of Ophthalmology, 1902, p. 725.

[7] v. Graefe's Arch., vol. lxi.

BIOGRAPHY OF SWAN M. BURNETT, M.D.

Swan M. Burnett, M.D., known everywhere as one of the world's leaders in ophthalmology, died at his home, 916 Farragut Square, Washington, D. C., Jan. 18, 1906, of edema of the lungs, resulting from organic heart disease, which of late years had somewhat curtailed his activity. He was not only known as a physician, oculist and teacher, and specially famed as an author upon ophthalmologic subjects, but was noted as an art lover and a philanthropist. We reproduce his recent portrait as our frontispiece.

Dr. Burnett was 58 years of age and had resided in Washington for thirty years. He was a native of Tennessee, and lived in that state until going to Washington, practicing medicine in Knoxville.

The deceased was, with Dr, Louis Marple, Dr. James E. Morgan and others, one of the moving spirits in the founding of the Emergency Hospital of Washington, when, in 1881, it first opened its doors in limited quarters at Tenth and E Streets. Dr. Burnett was connected with the institution up to the time of his death. He was one of the managers of the Cosmos Club and a member of the Columbia Historical Society. He has long occupied the chair of ophthalmology at the Georgetown Medical School. He was a member of a number of scientific associations, among these the American Medical Association, the American Ophthalmological Society, International Medical Congress, International Ophthalmological Congress, etc. Dr. Burnett was a patron of fine arts, and among his effects is a large collection of paintings, first editions, Japanese curios and articles of historical significance in the early annals of Washington.

The deceased leaves a wife by a second marriage, but there are no children in this branch of his family. By his first wife he was the father of two sons; one, Vivian Burnett, the second son, is now connected with *McClure's Magazine* in New York.

A particular hobby of Dr. Burnett was Japanese art. He wrote many articles for the *International Studio,* the *Craftsman* and the *Connoisseur* on this subject, dealing especially with the work of Korion, whose potteries and pictorial decorations he rated as among the masterpieces. Dr. Burnett's own collection of Japanese art objects is one of the most remarkable in the world. While it differs widely from the Freer collection, it is in many ways as notable. His interest in the art of Japan was largely centered in its application to the objects of domestic use, such as tea services, porcelains, mural decorations, utensils for the kitchen and for the farm, and lamps. His collection of war implements, helmets and swords is large. Many of them were presented to him, and others he had himself bought from Japanese noblemen.

Dr. Burnett's love of books was as great as his interest in art. He accumulated a library of many thousands of volumes, some of them first editions, and a large number of them bearing the author's autograph. His medical library is one of the largest in Washington and comprises many rare works. His own scientific writings are numerous, published in many medical journals and found their expression in several books. He is specially known as the author of a work on "Astigmatism."

I look back to the year of 1888, spent as his assistant, with particular pleasure, and know that his teaching was one of the principal factors in getting me interested in scientific ophthalmology, and to his example and advice I owe my literary inclinations. He aided me in scientific work more than any teacher I have ever had.

In him I particularly feel the loss not only of a teacher, but of a steadfast friend, and believe that I feebly express the feeling of the medical profession. His life and example will remain one of the guiding stars of ophthalmic progress.

H. V. WÜRDEMANN.

Abstracts from Recent Ophthalmic Literature.

ANATOMY.

The Mammalian Eye, with Special Reference to the Fundus Appearances.—Wood, Casey A., Chicago (*Amer. Journ. of Ophthal.*, October, 1905). The writer gives a résumé of George Lindsay Johnson's and Arthur W. Head's comprehensive study of the ocular fundi of the lower animals; he points out the marvelous nature of this undertaking and refers to the methods employed in the collection of material for Johnson & Head's wonderful atlas. Johnson divided the mammalian fundi, as far as color is concerned, into three categories: 1. The red type, including every shade of red, brown, chocolate and gray; to this class man and all the primates belong. 2. The yellow type, including all shades of yellow and orange; examples of this class are found in animals who have nocturnal habits. 3. The green and yellow-green type, comprising, among others, most of the carnivers and many of the rodents.

From a study of the eyes of mammals, particularly from the observations made by Lindsay Johnson on the appearance of the ocular fundi, the writer believes himself justified in drawing the following conclusions:

"1. The fundus appearances of the normal mammalian eye are practically identical in wild individuals of the same species. 2. Common features in the ophthalmoscopic picture are strikingly apparent in the numbers of the same genus and even of the same family. 3. As a consequence of the foregoing, the importance of using the ophthalmoscope in the classification of animals possessing eyes whose fundi can be seen is of great importance. 4. A complete account of any animal in a systematic treatise on zoology should include, when it is possible, at least a brief description of the ocular fundus. In other words, the practical zoologist should be able to use the ophthalmoscope. 5. Apart from disease, the principal cause of the variations in the color and other details of the fundus oculi of species is domestication. 6. Doubtless the habits and environments of the animal have been the chief factors in determining the coloration and other features of his eyegrounds. 7. Ophthalmoscopic studies of the eyes of the lower animals throw considerable light on the anatomy, physiology and embryology of the human eye. 8. An examination of the eye interiors of representative species proves that some of the conditions observable in certain animals have their analogue in man, as acquired disease, as congenital defects and as ancestral remains." C. H. M.

ANOMALIES.

A Form of Pseudocoloboma of the Iris or Ectropie Uvea Congenitum.—Cosmettatos, Athens (*Arch. f. Augenheilk.*, liii, B. 2). The first case was seen in a female. By daylight the pupil of O.D. seemed irregularly dilated at its upper outer margin, giving the appearance of a large coloboma. The color of the floor of the coloboma was so black that it was impossible to distinguish it from the pupil. By oblique light it was seen that the pupil was actually round and that there was no deficiency in the iris, but an abnormal pigmentation involving 1/3 of the width of its surface. The line of separation between this and the normal iris structure was a well-defined regular curve. The second case was in a male. In both eyes there were triangular areas with bases toward the pupil of extension of the pigment border. In neither of the cases was there a difference in the plane of the iris at the affected area. The pupils reacted well. There were no other anomalous conditions present. The author assumes that there was ectropia uvea. That the outgrowth of the pigment layer had spread out and come to occupy the connective tissue layer. W. Z.

Report of a Case of Congenital Corectopia, with Aphakia, and a Case of Congenital Leukoma of the Cornea.—Gratiot, H. B., M.D., Dubuque, Iowa (*Ophthalmic Record*, November, 1905). This patient was seen at the age of 38 years. History of congenitally deformed eyes and poor vision. Both pupils misplaced downward, and react promptly to light. Both lenses are absent. Floating membrane in vitreous, with atrophic spots in chorioid. O. D. V. = 10/200:15/200 W. + 13.00. O. S. V. = 15/200: 20/200 W. + 13.00. The second case is one of congenital leukoma of the right cornea in an otherwise normal child, aged 3 months. Family history negative, and the birth was normal. No history of inflamed eyes at birth. Examination revealed a large, dense, pearly white leukoma occupying the upper and outer quadrant of the right cornea. Its upper border is continuous with the sclera. The pupil dilated evenly and the eye was otherwise normal. M. B.

A Family with Irideremia.—Hamilton, T. K., M.D., F.R.C.S.I., Adelaide, South Australia (*The Ophthalmoscope*, October, 1905). Four members of this family were affected with iridic deformities. The father and two daughters had irideremia, a son

coloboma, besides a deceased son who had irideremia. The father, aged 36, had a cataract in one eye, well advanced, in the other aphakia existed, the supposition being that this lens had undergone spontaneous absorption, as the vision of this eye had been very poor and had recently greatly improved. The two daughters had lenticular opacities, with dislocation of their lenses upward. These eyes all had large errors of refraction which, when corrected, brought vision up to about 1/3. With the exception of the son, they all had ptosis and small eyeballs. The lenses prescribed were ground from amber-colored glass. This glass, the author believes, is preferable to smoked glass because it allows light rays to pass through freely, heat rays partially, and eliminates the actinic rays.
M. B.

Congenital Ocular Anomalies.—Pons y Marques, Palma de Mallorca (*Archivos de Oftalmologia,* December, 1905), reports a case of a man, congenital imbecile, family history no consanguinity or other anomalies, who presented the following ocular conditions: O. S. reduced in size, T. — 2. V. = 0. Very small pupil in lower inner quadrant, complete opacity of the lens, O. D. T. normal, V. = fingers, with difficulty 50 cm., not improved by lenses. Chromatic sense normal, horizontal nystagmus increased by fixation, downward coloboma of the iris, no pupillary reaction, large coloboma of the chorioid extending backward and including the papilla, three minute separate lesions, with corresponding field. H. M. F.

Coloboma of the Macula Lutea.—Cosmettatos, G. F., Athens (*Zeitschrift fuer Aug.,* 1905, xiv, p. 575), describes a coloboma of the macula in a boy, aged 8. The coloboma was traversed by 2 retinal and 3 chorioidal vessels, which apparently supplanted the circulation of the choriocapillaris, as the lack of a central scotoma proved the function of the retina in the area of the coloboma to be intact. There was, however, a paracentral scotoma, corresponding to a large atrophic chorioiditic focus, half a disc diameter from the temporal side of the coloboma.

In discussing the various theories as to the origin of coloboma of the macula, Cosmettatos adopts Deutschmann's view, which attributes the affection to an arrest of development, due to intrauterine inflammations of the inner tunics of the eye. The preservation of the retina is in accordance with Leber's explanation, that these inflammations may subside after birth. The resemblance of the coloboma to atrophic chorioiditic foci and the presence of other lesions of the chorioid in this case are considered by the author as a proof of an intrauterine chorioiditis. C. Z.

On Congenital Inflammatory Ectopia of the Pupil.—Jones, N. C., Canada (from the eye clinic of Professor Axenfeld in the University of Freiburg, i B., *Klin. Mon. fuer Aug.*, 1905, ii, p. 523). Since literature contains only an anatomical description of one case of congenital corectopia by E. von Hippel, in which, however, it could not be decided whether it was a consequence of inflammation or of an arrest of development, Jones reports 2 cases, one with anatomic examination, which prove, beyond doubt, the occurrence of inflammatory ectopia pupillæ. A child, aged 4 months, had hydrophthalmus of left eye, with slight opacity of the cornea. The iris, grayish-blue, differing in color from that of the other eye, seemed to lie on the posterior surface of the cornea and the anterior chamber obliterated. The pupil was situated 2 mm. below the upper corneal margin, was contracted and occluded by a gray-whitish membrane, T. + 1.

The examination of the enucleated globe revealed the iris to be pressed against Descemet's membrane. Its tissue, excepting the pigment layer, was entirely abolished, but in the ectopic pupil it was preserved and vascularized and formed triple folds. The inner epithelial layer of the ciliary body formed a large cyst. All these conditions must be considered as remnants of an inflammation of the upper portions of the iris and ciliary body and the occlusion of the ectopic pupil as the cause of hydrophthalmus. As there were no signs of recent inflammation, the process apparently took place not at the end of intrauterine life.

In the second child, aged 3 months, the pupil was displaced downward and outward, where the corresponding part of the iris was atrophic, covered and infiltrated by a fine grayish tissue, which also covered the pupil a little. Red ophthalmoscopic reflex was obtained. Since the pupil was only contracted, not closed, glaucoma did not develop, and the case presented a slighter degree of the same changes as those in the first, viz.: Corectopia, caused by cicatricial retraction after intrauterine inflammations of portions of the uvea.

C. Z.

Malformation of the Cranium. Troubles of the Visual Apparatus. Ambialet (*Annales d'Oculistique*, November, 1905). Among cranial deformities a particular type has been described, frequently associated with visual disturbances with atrophy of the optic nerves and exophthalmos. This deformity consists of a raising of the vault of the cranium and has been called the tower-shaped cranium and by some authors oxycephalus. The author publishes some cases of an opposite kind of deformity in which the vault, and particularly the frontal bone, undergo a flattening as a result of compression, and inquires what degree of deformity, in a subject otherwise normal, is compatible with good vision.

It seems that this deformity results from binding the heads of infants firmly with bandages, with a view probably of protecting the fontanelle and supporting the bones of the head, and that many women wear the bandage all their lives.

The author has examined a number of the victims of this practice in the hospitals and asylums of Toulouse. The result of this compression is a disappearance of the superciliary ridges and the frontal eminences and the pushing back of the parietal eminences. Even the base of the cranium is sometimes affected by the pressure on the mastoid region. The orbital cavities are somewhat reduced in size. There is a premature ossification of the coronal suture and a thickening of the bone in its neighborhood. In some cases there were exostoses on the internal surface of the frontal bone and adhesions of the dura mater. In cases of decided deformity the brain was reduced in weight. Generally there was more or less exophthalmos. No methodical examination of the refraction was made.

The author has not found a case in which blindness resulted from the compression, which does not seem to affect particularly the optic nerves or their centers. This may be explained by the absence of meningitis at the base in the region of the chiasm. These cases, he thinks, show that mechanical constriction of the head during its period of growth is not of itself sufficient to cause optic atrophy, though it may hasten the evolution of latent morbid affections, such as family atrophy, epilepsy, etc. G. C. H.

BACTERIOLOGY.

INFLAMMATION OF THE EYE DUE TO THE TOXINS OF THE GONOCOCCUS.—BURNETT, SWAN M., Washington (*Journ. Am. Med. Assn.*, Dec. 23, 1905), brings this subject more closely to the attention of the general practitioner and genito-urinary surgeon, among whose patients the disease shows itself primarily, and in whom a correct diagnosis should first be made and, of even more importance, a proper treatment promptly begun. It seems singular and altogether unaccountable that, while gonorrheal iritis finds a mention in every text-book on diseases of the eye, it is ignored in all but two of the treatises on genito-urinary affections. As to its frequency there is much difference of opinion, which may be accounted for by the fact that the complication is more frequent in some localities than in others, or by a failure of some clinicians to inquire into the existence of gonorrhea in the cases of iritis which they see. The iritis may be spongy, with a gelatinous exudate in the anterior chamber, or any of the forms of plastic iritis. Burnett reports a case of this sort attended with pain and swelling in the joints of the big toe. Conjunctivitis due to an endogenous infection of gonorrheal toxins is rare and is questioned by some. Burnett reports a case which might easily have been classed as an ordinary gonorrheal infection of the conjunctiva had the discharge not been examined bacteriologically and found sterile. The discharge was mucopurulent and stringy, not creamy. During the attack there was pain and tenderness of the ligaments of the right knee.

P. H. F.

Organisms Normally Present in the Conjunctiva.—McKee, S. Hanford, Montreal (*Montreal Medical Journal,* January, 1906). This report on the organisms found in the healthy conjunctiva is based on the examination of 140 cases, which was made in the Royal Victoria Hospital, Montreal, during the years 1902-03. In selecting subjects for the examination all cases of hyperemia of the conjunctiva were rigidly excluded. Of the 140 cases examined, 40 gave negative results. The organisms isolated in the 100 positive cases were as follows:

Staphylococcus pyogenes albus	48 times
Staphylococcus epidermis albus	9 times
Staphylococcus pyogenes aureus	2 times
Streptococcus pyogenes	16 times
Bacillus xerosis	42 times
Bacillus of diphtheria group	1 time
Sarcina lutea	1 time

His experience has been that in the great majority of normal conjunctivæ the ordinary pyogenic bacteria and the bacillus xerosis are present.

F. A. and P. G.

The Bacterial Flora of the Intestinal Mucosa and Conjunctiva of the Normal Chicken.—King, Walter E. (*American Medicine,* Sept. 2, 1905), has made this investigation with the following objects in view:

(1) The isolation and identification of the organisms commonly found on the intestinal mucosa, (2) to learn their distribution and possible relations to environment, and (3) to acquire facts to aid in the solution of the problem of the localization of bacteria on these membranes.

The results of this work make possible the following suggestions:

1. The flora of the intestinal mucosa is to a certain extent constant, being made up of about 50 different species of bacteria.

2. This flora appears to depend somewhat on environment and varies within certain limits, according to external conditions.

3. In the mucosa of the cecum and colon we find a greater abundance of organisms and a larger number of species than in other portions of the intestine.

4. There is a gradual decrease in the number of organisms and abundance of species as we pass from the cecum and colon to the ileum, jejunum and duodenum.

5. *Bacillus coli communis* is the predominating organism. Several varying types of this organism were isolated, and its presence depends on environmental influences.

6. The flora of the conjunctiva appears to be confined to certain organisms which are represented chiefly by the general bacterium and micrococcus. M. D. S.

The Clinical Importance of the Diplobacillus of Morax and Axenfeld.—Gifford, H., M.D., Omaha, Neb. (*The Ophthalmic Record,* November, 1905). This germ has not received the attention in America which it deserves. It is responsible for ulcerations of the cornea of a most stubborn type. The conjunctiva may be acutely or chronically inflamed from this germ, or the patient may experience scarcely any symptoms, except itching and fatigue of the eyes at night. The local appearances may not show anything beyond evidences of local irritation. Secretion, if carefully looked for, may be found in small quantity at the inner canthus. This secretion will be found swarming with the diplobacillus. The treatment should consist in the use of chlorid or sulphate of zinc, the latter in 1 per cent. solution, the chlorid in ¼ to 2 per cent. solution. M. B.

The Bacteria Found in the Conjunctival Sac After Operative Wounds Dressed with or without Occlusive Damages.—Vollaro (*Archivio di Ottalmologia,* xii, Fasc. 7-8, 1905), made a bacteriologic study of the conjunctiva after operations in (1) eyes left open to the air and (2) in others treated with occlusive dressings. In the first instance only a few folds of gauze were placed over the eye under a wire shield fastened to the brow, nose and cheeks. He concludes that in the cases treated by the "open" method there is an increase in the number of germs in the conjunctiva a certain number of hours after the operation, but this increase is much less than in eyes treated with an occlusive bandage. It is also noticeable that the germs found are the same species several hours after the operation as immediately before it. C. A. W.

PATHOGENIC IMPORTANCE OF THE BACILLUS OF CHALAZION (DEYL'S).—BIETTI, A. (*Archivio di Ottalmologia,* xii, Fasc. 11-12. Abstract in the *Clinica Oculistica,* October, 1905), has succeeded in finding the so-called xero-bacillus (identical with Deyl's bacillus) in seven out of twenty patients with chalazion. In four cases the *Staphylococcus albus* was found; in another it was discovered associated with pneumococcus; in still another was isolated the *Staphylococcus aureus,* while in seven the bacteriologic tests were negative. He then inoculated bouillon cultures of the xero-bacillus beneath the palpebral conjunctiva of rabbits. The result was the formation of a bunch which became transformed into a true abscess or else hardened and resembled a chalazion in appearance and touch. His results in this line correspond with those obtained by Hala; they were the same when dead bacilli were used and when the bacilli were mixed with antidiphtheria serum. The experimental chalazion developed, notwithstanding the fact that the animals had been immunized against the diphtheria toxin. Identical experiments were made with diphtheria bacilli, alive, dead and emulsified with antidiphtheria serum. The result was always the production of the experimental chalazion. Additional tests were partially positive with other germs, the prodigiosus, the "rose" yeast fungus, the pseudogonococcus, the staphylococcus pyogenes albus, the tetragonus and a bacillus not yet perfectly identified, but associated with catarrhal conjunctivitis. It is evident that the so-called experimental chalazion may be produced by various micro-organisms independently of their virulent power. He also concludes that it is incorrect to attribute any specific power for the production of chalazion to the bacillus of xerosis. Probably they all induce irritation in the same way, as a foreign body. C. A. W.

TWO CASES OF TRAUMATIC INFECTION OF THE OCULAR GLOBE BY AN ANAEROBIC MICROBE (BACILLUS PERFRINGENS).—CHAILLONS (*Annales d'Oculistique,* August, 1905). Chaillons, after reporting these two cases, concludes that, in cases of traumatic infection of the eyes in which bacteriologic examinations have been made, and from the negative result of the cultures, the conclusion has been reached that infectious germs were absent, it is possible that anaërobic microbes may have been present. He says that, to be complete, the bacteriologic study of every case of infection of the eye should include the search for anaërobic microbes. G. C. H.

STAPHYLOCOCCUS INFECTION OF THE CONJUNCTIVA.—POULARD (*Archives d'Ophtalmologie,* October, 1905). Staphylococcus infection, formerly considered a frequent cause of conjunctivitis, has lost its exaggerated importance in proportion as the etiology of conjunctivitis has been more definitely determined. It is not that the presence of staphylococci in the conjunctiva is rare, for it is met with in many conjunctival affections and even sometimes in the cul-de-sac of the healthy conjunctiva.

Among the affections of the conjunctiva there are some whose secretion never contains the staphylococcus. Morax has never found it in the numerous cases of acute contagious and blenorrhagic conjunctivitis whose secretion he has cultivated. The author has met with it only exceptionally in those forms of conjunctivitis, though it is more frequent in conjunctivitis from the diplobacillus, particularly in old cases. In all these forms of conjunctivitis the staphylococcus is not more frequent than in the healthy conjunctiva. Its presence is frequent in phlyctenular conjunctivitis, but, the author says, there is no good reason to suppose that it is its cause. The variableness of its presence in these affections, its fewness, and the existence, with or without it, of other germs do not tend to attribute to the staphylococcus a pathogenic rôle.

There are other forms of conjunctivitis, however, in which the staphylococcus really does exercise a pathogenic action. Poulard reports eight cases of staphylococcus infection of the conjunctiva, occurring at the Hotel Dieu, which are distinguished from other infections by their clinical aspect, their evolution, the etiologic conditions of their appearance and the existence in the secretion of an abundance of staphylococci.

After or during the evolution of palpebral affections, as hordeolum, etc., all the symptoms of an acute conjunctivitis appear. A yellowish, viscid, mucopurulent secretion forms in the cul-de-sac, matting the lashes and covering the surface of the conjunctiva with a fine, easily detachable pellicle. The preauricular gland is swollen and tender, the cornea remains intact. Culture of the secretion gives colonies of staphylococci.

The majority of cases of hordeolum and other palpebral affections are not accompanied by conjunctivitis, even though staphylococci may be found in the cul-de-sac. The staphylococcus, like the streptococcus, the pneumococcus and some other microbes, may exist in the conjunctiva without having any pathogenic effect, differing in this from the bacillus of Weeks, the diplobacillus of Morax and the gonococcus which inevitably cause conjunctivitis. Other conditions which are not yet well determined, are required for the staphylococcus to produce an inflammation of the conjunctiva. The infection is promoted by a pre-existing conjunctivitis or a mechanical injury of the conjunctival cul-de-sac. G. C. H.

THE VALUE OF THE OPSONIC INDEX FOR TUBERCLE IN PHLYCTENULÆ.—NIAS, L. B., and PATON, LESLIE, London (*British Med. Journ.*, Nov. 18, 1905, report of November meeting of Ophthalmological Society of the United Kingdom). This preliminary note followed a research suggested by D. A. E. Wright, who had observed that a crop of phlyctenulæ frequently developed in patients undergoing inoculations with tuberculin. This suggested the investigation of the opsonic index in such cases in the hope that it might throw some light on the question of the tuberculous nature of the disease and show whether it was exogenous or endogenous in origin. The opsonic index was determined by Dr. Nias in 20 cases of the disease, 5 patients with other forms of conjunctivitis being used as controls, and 7 of the 25 cases being simultaneously examined so as to determine their opsonic index for staphylococcus. The results showed in striking form variations from the normal in the tuberculous index of the cases of phlyctenular conjunctivitis, practically normal indices for the other forms, and practically normal indices for staphylococcus in the majority of cases tested. In one case in which there was fairly advanced phthisis, both the tubercle and also the staphylococcus indices were lowered. C. H. M.

NEW EXPERIMENTAL RESEARCH IN ASPERGILLUS KERATITIS.—ROLLET and AURAND (*Revue Generale d'Opthalmologie*, Dec. 31, 1905). Notwithstanding the rarity of the affections produced in man by the moulds, the mycoses are well enough known in a general way. Rollet and Aurand state that in the respiratory passages of animals, especially of birds, Mayer, then Miller (1842), found in them for the first time moulds. A few months later it was that Bennet described the first case of human pseudo-tuberculosis. Soon numbers of observations were published: those of human pneumomycosis of Virchow (1856) and of Slieda (1866). Since then Wreden, Bezold and Politzer (1870) published reports of otomycosis. Toward the same year Grohe and Block inaugurated experimental studies in human aspergillus and obtained positive inoculations. Koch and Gaffky (1881) proved, in short, that the *Aspergillus fumigatus* is pathogenic. Lister, Dieulafoy, Chantemesse and Widal discovered the pseudo-tuberculous aspergillus in the throat of pigeons (1887). The authors state that, if the aspergillus is well known as causing pulmonary involvement, it is much less so as to its ocular manifestations. The published cases of ocular aspergillus or kerato-mycoses are very few; and with all of the authors' efforts they were able to find only sixteen undoubted cases. The first observation was published by Leber (1879). The others are

Fuchs (1894), Uthoff and Axenfeld (1896), Schirmer (1896), Uthoff and Axenfeld two cases (1897), Wicherkeiwicz (1900), Collomb (1900), Markoff (1900), Basso (1900), Gentilini three cases (1900), Moores Ball (1901), Buchanan (1903), Martin (1904). All these cases originated from wounds in agriculture, from blades of wheat, from blows with earthy material, farina, portions of fruits, from points on chestnut capsules. The affection begins from a cup-shaped ulceration, its center a whitish yellow; soon a grayish-yellow projection appears, resembling a small button and somewhat like a phlyctenule, but differing from the latter by its dry aspect; it is hard, dry and friable; a subepithelial abscess follows. There is always conjunctivitis, iritis and secondary hypopyon, with more or less acute pain. The evolution is always slow, two or three months. In about a month there is formed around the aspergillus zone a line of demarkation with a white annular infiltration, the appearance of which ring is eliminated and readily detached. These keratites often may perforate the cornea, and in many instances the eye is lost. Collomb has remarked that in all the cases described before his, the site of the lesion was at the corneal center where the defensive vascular reaction is less and the receptivity greater. In nearly all the cases there is found the *Aspergillus fumigatus.* Markoff has also said that the rarity of the affection is due in part to the fact that only the *Aspergillus fumigatus* is pathogenic, and he further states that the attention of authors has not been attracted by typical cases, while those cases in which the lesion is but little accentuated are recorded under other names. From the experimental point of view, Leber, who published the first case of kerato-mycosis, and who was also the first author to study the subject by inoculation with *Aspergillus fumigatus,* was able to provoke keratitis, hypopyon and panophthalmitis. He also inoculated with *Aspergillus niger* in the rabbit's cornea. Deutschmann, also, after inoculating the spores into the vitreous of the rabbit, brought about a panophthalmitis and also provoked sympathetic ophthalmia of the other eye. In nearly all the cases which have been carefully studied the *A. fumigatus* has been found. Halbertsma, however, has described a case of keratitis with hypopyon which was caused by *A. flavescens.* Rollet and Aurand state that there are pathogenic varieties of aspergillus which affect the cornea less, and the object of their research was to consider these with the others. The following is a list of the various species of aspergillus with which the authors experimented: *A. fumigatus, A. flavus, A. niger, A. ficuum, A. glaucus, A. ostianus, A. minimus, A. oryzæ, A. clavatus, A. varians, A. caudatus, A. wetii, A. novus.* The authors' conclusions are that the *A. fumigatus* is very pathogenic for rabbit's cornea; the *A. flavus* is equally pathogenic in the cornea of the rabbit; the *A. oryzæ* is clearly pathogenic; *A. niger* is moderately so, as is the *A. wetii; A. candidus* is only slightly pathogenic; *A. glaucus, A. ostianus, A. maximus, A. clavatus, A. varians, A. novus* are not pathogenic in the rabbit's cornea. The paper is quite long, but very interesting. B. E. F.

CASUISTICS.

EDUCATION OF THE BLIND IN THE UNITED STATES.—MCCUNE, T. F. (*Bulletin of Iowa State Institutions,* October, 1905). The blind population of the United States on June 1, 1900, was 64,763, or one blind person out of every 1,178. There were 42 institutions for their education, most of them well housed and under management of boards appointed by the governor. About one blind person in ten becomes an inmate of an educational institution. The number of pupils enrolled was 4,422. To secure the attendance at school of all its eligible blind is a difficult matter for any state. School training properly begins with the kindergarten. The Boston institution has a model plant of this kind. During 1904, 106 children were enrolled. These were divided into four families, each family living in its own building entirely independent of the other groups. Gymnasia, music halls, ample walks, play grounds, tools and apparatus of every kind are at hand. Physical training is an absolute necessity. The pupils are arranged in classes where they are taught, individually and in groups, to perform with rings, wands and dumb-bells. In the Iowa school, the hour after breakfast is spent in fatigue duties. Every student makes his own bed. The whole building is swept and dusted by both boys and girls, each being given only such space as may be comprehended by the inner or mental eye. Some students are detailed for dining-room, kitchen or bakery work. All girls with sufficient sight do their own ironing. Even in the nurseries, the little ones of both sexes make the beds, sweep and dust, and arrange the furniture. The close supervision required renders this plan impracticable, except for a brief part of the day. In the New York State school, at Batavia, the instructor devotes about five hours a day to drill and training. The students are divided into eight classes according to ability. Measurements and tests of all male students over 14 are taken. They show "a great deficiency in the development of the flexor and extensor muscles of the lower limbs, inadequate lung capacity, faulty shoulder and chest development." The work is planned to overcome these defects. Great prominence is given to manual training by the

Sloyd system. The girls are trained in knitting, woodwork and sewing. In knitting, the first year is devoted to plain knitting; the second, to seaming, widening and narrowing; the third, to the use of finer materials with both fine and course needles; the fourth, to use of four needles in thread knitting. The course in wood Sloyd is three years. The girls begin with a knife. By the end of their course they have become trained in the use of all the simpler tools used in woodwork. A course of eight years is given in sewing. During the first year the girl is taught to make stitches with heavy worsted or perforated leather. In the second, with coarse cloth. In the third and fourth years she darns, patches and hems. In the fifth and sixth years she learns to handle the sewing machine and to turn out merchantable work. In the seventh and eighth years she takes advanced work in measurements, drafting patterns and fitting and completing garments. In drafting, a dressmaker's wheel takes the place of a pencil, leaving a line of perforations that can easily be followed by the finger. Every school located in a city should have shops for beadwork, cane seating, netting, brooms, carpets, mattresses, sewing (hand and machine), knitting, crocheting and fancy work. In literary training all the schools aim to give a primary, grammar and high-school course which will compare favorably with those of city schools for sighted pupils. The equipment for literary work consists of models, maps, writing tablets, typewriters, manikins and, last and most important of all, the embossed book, the most effective instrument in the education of the blind. Of these there are not far from 80,000 in the United States, or 18 books for every student under training. The study of music is considered of paramount importance. The course of study covers from five to twelve years. Every capable student has the opportunity of becoming a musician, sound in theory and skillful in technic. In addition to piano or organ, one or more small instruments are expected to be mastered during the school course. The blind child first learns the length, pitch and power of tones. Then will come finger work with rhythmical designs. Then the wrist movements, the arm movements and so on. Embossed musical notation is generally called point music notation. This system represents every musical character by a group of tangible points. The blind must read the notes expressed in these points, commit them to memory, then play the piece from memory. Three point systems are in use, each of which has a large and growing list of standard music. These are the New York point, American Braille and English Braille. The majority of the schools have bands and orchestras. That of the Boston school consists of 6 first violins, 5 second violins, 3 violas, 4 violoncellos, 2 contrabasses, 2 flutes, 2 oboes, 2 clarinettes, 2 bass clarinettes, 3 horns, 2 trumpets and a pair of tympani. The classical performances of this orchestra are so artistic as to call forth the highest praise from professional musicians. The cost of educating the blind far exceeds that of schools for seeing pupils. The proportion of teachers to taught must be large if real progress is to be made. P. H. F.

Examination of the Eyes of Pregnant and Lying-in Women.—Polte, Dr. (from the eye clinic in the University of Halle, A. S., *Klin. Mon. fuer Aug.*, 1905, ii, p. 531). Polte examined with the ophthalmoscope 200 pregnant women and 177 after delivery. Of the former 178 were healthy, 18 had albuminuria and 6 out of these eclampsia, one morbus maculosis, 3 pyelitis. As a rule, the fundus oculi was normal in the 178 pregnant, 116 of which were in the last month. Symptoms similar to those in neuritis, as found by Bosse in 75 per cent. of women during gravidity, could never be ascertained. Only in 2 cases a central white fovea of the disc was observed *postpartum,* which before birth had the same red tint as the remaining portions of the disc. In a third case the borders of the disc, indistinct before delivery, were well defined after it. Only 1 out of the 6 eclamptic cases presented slight ophthalmoscopic changes which had subsided on the first day of the puerperium. Five out of 10 cases of albuminuria with casts had chronic nephritis. Two with albuminuric retinitis are reported in detail. During labor nothing abnormal was observed, excepting slight hyposphagma in 3 cases.

Polte's investigations do not corroborate the assertion of Bosse that ophthalmoscopic changes are frequent during pregnancy.

C. Z.

About the Frequency of Myopia in the Dymsholm (near Stockholm) School.—Wildman, K. (*Wiener Medizinische Wochenschrift,* Oct. 7, 1905). Of 151 pupils 4 per cent. were myopic, and only one pupil had a myopia of more than 1 D. The small percentage of myopics in this school is not due to the fact that the course of instruction is of shorter duration or that the hygienic condition of the schoolhouse is more favorable, but to the fact that the students have more opportunity to spend their leisure time outdoors.

In Sweden there has been a great decrease of myopics in the schools in the last twenty years, because the sanitary conditions of the schoolhouses have been markedly improved, the course of Latin in the high schools diminished and gymnastics increased. It is, however, a curious fact that, with the identical courses of instruction, the girls in these schools seem to have a greater tendency to myopia than the boys.

The author has found the percentage of myopia among male medical students to be 28 per cent., with an average of 2.25 D.; among female students, 30 per cent., with an average of 6.25 D.

J. G.

CATARACT.

The Preventive Treatment of Senile Cataract.—Wilkinson, O., Washington (*Gaillard's Southern Medicine,* January, 1906), thinks it wrong to advise a patient with beginning cataract to go untreated until he is completely blind and ready for operation. Cataract is not merely a senile change, but the result of disease of the eye or of constitutional disorder, and the lens changes are chemical, not morphological. The weight of the cataractous lens is far below normal, probably on account of loss of fluid. The idea of preventive treatment, unfortunately, smacks of quackery, as absolutely worthless remedies have been lauded as specifics for cataracts since the earliest times, and charlatans have made this "cure" a specialty. Plinus praises "honey and saffron cooked in the blood of hyenas." In 1876 the scientific and political journals of France and Germany lauded the virtues of dilute phosphoric acid. To-day both the secular and religious press are filled with advertisements of worthless drugs for the "absorption treatment" of cataract. Of the chief of these, cineraria maritima, Jennings says that there is no evidence to show that it is of any value. There is no known means of clearing up a cataractous opacity, once it is formed. Stricker, de Schweinitz, Bulson, Pyle, Risley and many others agree on this point. Nevertheless, not a few cases are on record in which opacities of the lens cleared up and vision improved. This may be due to clearing up of the vitreous, improvement in general health and the arrest of an inflammation of the retina or chorioid by treatment. Wilkinson reports a series of 21 cases of incipient cataract which have been under observation for three years. Not one of these has shown any marked deterioration of vision. Among the morbid conditions which may lead to lenticular opacities, and which accordingly offer a field for prophylactic treatment, we have to consider constitutional disorders, associated ocular diseases and errors of refraction and accommodation. General health has much to do with the development of cataract, and a thorough physical examinaiton should be made by the family physician in every such case. Becker and Stricker agree that, strictly speaking, there is no such thing as primary cataract, and that such expressions are simply cloaks for our ignorance. Deutschmann found nephritis in 33 per cent. of his cataract cases. The influence of diabetes is well known. Michel thinks that atheroma of the carotids may produce cataract. This comes about either in consequence of the slowing of the blood current and consequent nutritional disturbance in the eye or by the intermediary of atheroma of intra-ocular vessels. Galezowski lays stress on heredity, gout and various diseases of the chorioid in the causation of cataract, and Risley believes that the last group are, in the majority of instances, due to refraction error. The constitutional treatment should consist in meeting any condition which is interfering with the patient's general health. Gouty, rheumatic and lithemic conditions are often present and should have dietetic and medicinal treatment. The urine should be examined repeatedly and thoroughly and the quantity of solids estimated. The digestive apparatus should be kept in order, as it is one of the most frequent sources of poison to the general system. Alteratives, tonics and alkaline waters are of great importance. Wilkinson gives lithia water freely in these cases. The best alteratives are potassium iodid, sodium iodid, pilocarpin and biniodid of mercury. The tonics recommended are iron, quinin, strychnin and gentian. In lithemic conditions, Turkish baths three times a week are advised, with hot stupes to the eyes. Where the lens is much swollen dionin might be of service. Exercise in the open air is essential, walking being the simplest and best form. The patients have a tendency to keep indoors and vegetate, and this must be energetically counteracted, particularly in the case of women, whose duties seldom call them out of the house. The gross lesions of the eye which produce cataract, such as plastic iritis, syphilitic lesions of the uveal tract, glaucoma and marked chorioidal affections, are well known. It is the low-grade inflammation of the chorioid which causes the trouble. They often start early in life after measles, scarlet fever or some other febrile disease of childhood. The optical treatment of incipient cataract is almost entirely neglected, as the deterioration of vision is assumed to be due entirely to opacity of the media. Correction of ametropia often gives surprisingly good vision. The constant strain on the ciliary muscle in trying to overcome these refractive errors materially aids the process of malnutrition and the development of cataract. In 81 cases Risley found that 40 per cent. had asthenopic symptoms before the development of lenticular opacities. Hyperemia of the uvea from excessive accommodative strain may be the link with impaired nutrition of the lens. Opacities gradually develop and increase until the patient is aware that his vision is becoming obscure. At this time, after he has made futile efforts to get satisfactory glasses from the "refracting optician" or "eye-sight specialist," and when there is a permanent deposit in the lens, the oculist first sees these cases. The preventive treatment is most encouraging if started early. All the literature shows that it is possible to prevent a high percentage from progressing in incipient cases. The early correction of ametropia and the constant use of that correction for both far and near is important. Bifocals are advisable so that the patients may always have their glasses with them. The patients should use their eyes sparingly, avoid fine needlework, and have good light for reading.

P. H. F.

THE SUCCESS WHICH AT THE PRESENT DAY ATTENDS THE OPERATION OF CATARACT EXTRACTION AND THE CAUSES THAT CONTRIBUTE TO IT.—THEOBALD, SAMUEL, Baltimore (*Amer. Journ. of the Med. Sciences,* January, 1906). The writer states that there can be little question that appreciably better results are obtained at the present time from cataract extraction than 30 years ago and much better than 50 years ago; during the first half of the last century the most skillful surgeons were content if their failures did not exceed 12 per cent.; during the two decades following the introduction of von Graefe's operation there was a definite improvement in the results secured, though 8 to 10 per cent. of failures were not uncommon; at the present day an excess of 4 or 5 per cent. in failures would be considered a poor showing. In a compilation of the results of over 2,000 extractions by well-known ophthalmic surgeons of this country and Europe made by Ring in 1895 the percentage of failures was estimated at 3.87; a similar result is given in about 200 cases operated on by the writer.

The causes for the better showing as compared with 50 years ago are given as (1) the improvement in method introduced by von Graefe, (2) the use of cocain, (3) the application of the principles of antiseptic surgery, (4) skilled nursing, (5) improved hospital facilities, (6) provision against postoperative accidents afforded by contrivances such as protective shields, and (7) the more definite specialization of eye surgery.

"In view of these many factors tending to promote success in cataract extractions, the pertinent question suggests itself, Why do we not obtain still better results? Why should there be a failure in every twenty or twenty-five operations for cataract? Why should there be, in addition to these failures, 6 or 7 per cent. of only partial success—in cases in which vision less than one-tenth is secured? the answer is that, in spite of the most careful antiseptic precautions, about 2 per cent. of the eyes operated on are lost by pyogenic infection; that a not inconsiderable proportion of cataractous eyes are unsound in other respects and, therefore, not capable of withstanding the shock of operation as they otherwise would; that, as cataract is peculiarly a disease of advanced life, the subjects of it are often not in the best condition for surgical procedures, 1 per cent. of them being glycosuric, 6 per cent. albuminuric, and a much larger proportion having atheromatous arteries, and, finally, that the temperament of the patient plays a not inconsiderable part in the outcome of every operation for cataract.

C. H. M.

EXTRACTION OF CATARACT IN THE CAPSULE.—SMITH, MAJOR HENRY, Jullundur, Punjab, India (*Archives of Ophthalmology,* November, 1905), strongly advocates the extraction of cataract in the capsule and believes it should be the operation of election, to which the exceptions are few. The author's personal experience extends to over 11,000 extractions; of these about 2,000 were made by doing a capsulotomy and 9,000 by extracting in the capsule.

The author depends almost entirely on inspection of the eye to determine whether or not the prognosis will be favorable, and states that "the reaction of the pupil to light is almost as accurate an indicator of the visual acuteness of the retina as the galvanometer is of the electric current."

Smith adds that "cataract in children and atrophic cataract are not suitable for extraction in the capsule. In the semi-gelatinous variety the lens occasionally has a peculiar bluish tinge. These cases also are unsuitable for extraction in the capsule, for the capsule is weak and liable to become ruptured during the operation, allowing the core and lens matter to escape, and, if the surgeon be not dextrous, it will retract, together with some lens matter, so that the ultimate effect on the eye is no better than if the operation had been performed by scratching the capsule." All cases were operated with iridectomy.

The author gives the details of his operation and claims the following advantages: Elimination of iritis and after-cataract, both of which are serious complications; vision is more acute; no instrument or douche need be inserted to remove lens matter from the interior of the eye, which is so often the cause of striped keratitis and other complications; no friction need be made to the cornea to remove lens matter, and thus the minimum of injury is done to the epithelium of the cornea and conjunctiva, and hence but little conjunctival irritation follows the operation.

W. R. M.

THE TREATMENT OF CATARACT IN CHILDREN.—SMITH, HENRY, Jullundur (*The Indian Medical Gazette,* October, 1905), says he has long since given up the treatment of cataract in children by needling the opaque matter remaining stationary and not being in any way absorbed. These soft cataracts have so very often an opaque capsule that, assuming the lens matter be absorbed, the opaque capsule will have to be dealt with later on. "The majority of cataracts in children we may divide into two classes: (a) Those whose juice is of a milky consistency. These are the only cases that respond to needling. (b) Those whose juice is of gelatinous consistency. You may needle those as often as you like, but the matter remains stationary and is not absorbed. The (a) variety has a somewhat flocculent appearance, somewhat like the appearance of pearl." Dr. Smith's routine practice now is to extract cataracts of all varieties in children. The incision required is not more than one-fifth of an inch. When the capsule is lacerated the soft material easily escapes from the wound. The capsule, if opaque, is torn out at the same time by reaching in an iris forceps and pulling it free. Even if not opaque, a piece of capsule is often torn out to avoid an after-cataract later on. The operation is usually accompanied by a small iridectomy and afterward a few drops of eserin solution are instilled on account of the great tendency to prolapse of iris. There is very seldom iritis following. In his opinion, cataract in children should be extracted as soon as diagnosed. It is of the utmost importance in children to remove any obstacle to light, getting at the retina as early as possible, as the visual function does not develop if not used, and, if not allowed to develop in the first few years of life, it will never develop to anything like perfection. After 12 years of age the vision resulting is not of much use to the possessor. F. A. and P. G.

TETANY-CATARACT.—ZIRM, ED., Olmutz (translated from vol. lii, German edition, June, 1905, by Dr. Percy Fridenberg, *Archives of Ophthalmology,* November, 1905), believes that tetany is an important etiologic factor in cataract formation, and quotes numerous authorities who have reported cases following attacks of spasm. Of ten children suffering with tetany, Peters was able, in four, to observe the development of zonular opacities. Zirm reports five cases of cataract occurring in patients who had previously suffered from tetany. In all cases an exhausting illness had preceded, terminating in the complete or almost complete loss of the hair and nails. In every case there had been attacks of cramps, which, the author believes, were tetany seizures. Zirm emphasizes the fact that the trophic disturbances invariably affected epithelial structures (skin, hair, nails, lens) and calls attention to the causal relationship between nutritional disturbances and cataract and also to the effect of the tetanic cramps on the ciliary muscle in producing spasm of accommodation. Zirm operated these cases by simple linear extraction without discission and obtained good results.

W. R. M.

Serious Hemorrhage Lasting Four Weeks Resulting from the Extraction of a Senile Cataract.—Becker. Dresden (*Wochensch. f. Therap. u. Hyg. des Aug.*, No. 1, 1905). The patient was a man 73 years of age, with no history of a hemorrhagic diathesis, myopia, glaucoma or syphilis. The urine did not contain either sugar or albumen. The bright red hemorrhage began as soon as the iris was grasped by the forceps. All means of controlling the hemorrhage failing, evisceration of the globe was performed. But this did not arrest the hemorrhage nor did cauterization of the arteria centralis retinæ. Bleeding was finally arrested by dropping sterile gelatin into the scleral cavity. Becker thinks that the cause was an anomalous distribution of the ophthalmic artery with general arteriosclerosis.

W. Z.

CHORIOID.

Some Unusual Fundus Conditions. Duane, Alexander, M.D., New York City (*Ophthalmoscope*, December, 1905). Two cases of black spots in the macula are reported. In one case the author had an opportunity of seeing the eye before the development of the black spot and then again after its formation, thereby noting that central vision was lost after the black spot had formed. In the other case the black spot was not exactly central, so that the central vision was preserved.

A case is reported of coloboma of chorioid and retina skirting macula, with para-central scotoma, with relative central scotoma. Vision 15/40 to 15/100. Another case is reported of coloboma of the chorioid in macular region with partial retention of the retina. Field uniformly contracted down to 20°. Vision 20/20.

Another case is reported of coloboma of the chorioid situated under the disc. Attached to its nasal border by very fine filaments is a slender, transparent, elongated, wormlike body, which extends a short distance into the vitreous.

M. B.

Upon Disseminated Sympathetic Chorioiditis.—Coppez, Dr. Henri, Brussels (*Ophthalmoscope*, November, 1905; see also *Archivos de Oftalmologia*, December, 1905). This affection manifests itself by the appearance of little, round spots of yellowish color in the periphery of the chorioid. These are very small, measuring scarcely 1/10 of the papillary diameter; they are of nearly equal dimensions, but at times become confluent in such a way as to form a focus of some little size with festooned edges. They are to be found more particularly near the branches of the retinal vessels, which often cross them. Their border is regular—not encircled with pigment. There is generally little effect on the neighboring parts. The papilla is slightly hyperemic; the veins are more or less dilated. The vitreous body remains transparent. The iris does not present anything special; there is sometimes a little pericorneal injection and a little Descemetitis. After several months these spots disappear, leaving behind no traces, or they become atrophic; they bleach, but without abnormal pigmentation; others persist without modification. The prognosis is favorable. The greater part of cases known have recovered. The usual forms of sympathetic ophthalmitis are sometimes accompanied by similar lesions. The media must be clear enough in such cases to render an ophthalmic examination possible, which is not always the case. Cases have been reported by Everbusch, Dolschenko, Leplat, Schirmer, Hirschberg, Casper, Haab and Osaki. The author reports two cases. M. B.

A Case of Chorioiditis, Due Probably to Necrosing Ethmoiditis.—Bulette, W. W., Pueblo, Colo. (*Medical Herald,* September, 1905), gives the clinical data of a case of central chorioiditis caused by necrosing ethmoiditis. At the time the author first saw the case vision was O. O. = 5/20 V. O. S. = 5/35. The chorioidal lesions at that time appeared non-progressive, and treatment directed to the relief of the nasal obstruction and necrosing ethmoiditis was followed at the end of eight months by an increase of vision in O. D. to 5/7.5 and in O. S. to-5/10. W. R. M.

CIRCULATION.

Ophthalmoscopic Appearances of a Case of Perivasculitis of the Retina and Chorioid.—Myers, T. D., M.D., U. S. Naval Medical School (*Ophthalmoscope,* November, 1905). This case was first seen when she was 12 years of age. At that time she had normal ophthalmoscopic appearances. An error of hypermetropia with astigmatism was corrected. She passed through several attacks of illness, and when again seen at the age of 20 was found to have traces of albumen in her urine. Her vision was perfect in each eye. She gives a decided gouty history. Both fundi present a very striking picture of perivasculitis. She was purged with calomel in broken doses, and placed upon teaspoonful doses of Basham's mixture three times daily. This treatment was continued for ten days, at the expiration of which time very striking improvement had taken place. Two pictures are presented of her condition, one before and the other after treatment. The author believes the condition was caused by a gouty exudation into the lymph channels of the retinal vessels. M. B.

Primary Cavernous Sinus Thrombosis.—Zentmayer, William, and Weisenburg, T. H. (*Am. Jour. Med. Sciences,* February, 1906) describe the case of a woman, aged 34 years, with a decided nervous history, who began to have slight exophthalmos and ptosis on the right side probably before the eighth year. These ocular symptoms with additional pain and inflammation of the right eye heralded the approach of the first menstrual period and at each menstruation these symptoms were more severe. Four years after marriage she gave birth to twins, when it was noticed that the exophthalmos was more marked than ever before and that there was ptosis of both eyelids. The ptosis of the left eye soon disappeared. Examination at present shows a marked exophthalmos and almost complete ptosis of the right eye, with marked venous congestion of the eyelid. There is a slight atrophy of the right optic nerve and pallor of the left. There is an involvement of all of the cranial nerves of the right side, with the exception of the eighth, and an involvement of the second and third nerves on the left side. The ocular symptoms become more severe at each menstruation. The exophthalmos might have been produced by many causes, but that found with cavernous sinus thrombosis is due to the venous congestion, and it may be that during the menstrual period there is an increase in the amount of congestion. The authors explain the paralysis of the third, fourth and sixth nerves of the right side and of the third nerve of the left side as being due to the pressure exerted by a thrombus in each cavernous sinus. They think the extension of the thrombosis into the superior and inferior perosal sinuses explains the involvement of the other cranial nerves. They discuss the probable reasons why menstruation and pregnancy affect venous congestion. M. D. S.

Contribution to the Clinical Picture of Embolism of the Central Retinal Artery, with Remarks on the Course of the Macular Fibers in the Optic Nerve.—Velhagen, Chemnitz (with six illustrations, *Klin. Mon. f. Augenh.,* 1905, No. 11, p. 140). A man, aged 40, who had had ulcerous endocarditis and was still suffering from mitral stenosis, suddenly lost his speech and the sight of left eye, with the typical picture of embolism of the central retinal artery. Between the hazy disc and the dark red fovea there was a rhomboidal, well-defined, normal area of retina, with a normally filled, small blood vessel coursing from the disc to the macula. V. = fingers at 1/3 meter excentrically. After a month the optic disc was atrophic. Toward the nasal side an oval-shaped area of 15° and 10° of the visual field was preserved. The patient died two months later and Velhagen examined the eyeball anatomically. At the entrance of the intervaginal space an embolus was found in the central artery. The optic nerve showed secondary centripetal degeneration. Only a peripheral sector at the temporal side was intact, representing the papillo-macular fibers which had provided the preserved area of the retina. Velhagen concludes from his positive pictures, which certainly did not contain the macular fibers, that, behind the eyeball these probably run in the apex of the temporal sector, close to the central vessels, not peripherally, as generally stated. C. Z.

A Case of Embolism of the Central Artery of the Retina.—Zagkin, Mowogeorgiewsk (*Woch. f. Therap. u. Hyg. des Aug.*, No. 5, 1905). The patient was a woman, 43 years of age, who six years previously had had an attack of rheumatism and four years later developed a mitral insufficiency with later disturbance of compensation. Following an attack of unconsciousness the sight of the left eye failed suddenly. There was systolic murmur at the apex and accentuation of the second sound at the pulmonary artery. The urine contained a trace of albumen and hyaline casts. When seen by Zagkin four days after the attack, V. = 5/LXX. The visual field was contracted up and in and up. The ophthalmoscopic changes were those of obstruction, with several hemorrhages. Seven weeks later the nerve was atrophic. He believes the case to have been one of embolism of the inferior branch of the central artery of the retina. He states that in 180,000 patients seen in the St. Petersburg Eye Institute there occurred but 8 cases of embolism of the central artery of the retina. W. Z.

CONJUNCTIVA.

A Case of Severe Blenorrhea of the Conjunctiva in the Adult Checked in Four Days.—Darier, Paris (*Die Ophth. Klinik*, No. 22, 1905), records an instance of gonorrheal ophthalmia in a man of 20 years seen on the third day of the disease, in which the progress of the affection was checked by the instillation of a 10 per cent. solution of argyrol every half hour and the occasional use of a 10 per cent. solution, together with dionin. On the seventh day there was not a trace of pus present. W. Z.

Vernal Conjunctivitis in the Negro.—Roy. Dunbar, M.D., Atlanta, Ga. (*Ophthalmic Record,* October, 1905). A study of ten cases of corneal disturbance in the negro has been made, which, in the opinion of the author, were cases of bulbar vernal conjunctivitis. No palpebral lesions existed. There was present at the sclero-corneal margins elevated, circular, waxy and gelatinous looking masses, extending from one-half to four mm. into the cornea. The subjective symptoms were not severe. They all proved very untractable to treatment, and the condition came on every summer and lasted through the warm months. He believes that it is quite possible that the different views expressed upon vernal conjunctivitis are largely due to different aspects of the disease in different localities. An extensive report from Prof. H. F. Harris on his findings from examination of shavings from the hyperplasias of the corneæ of some of these negroes' eyes is given. M.B.

A Case of Disease of the Conjunctiva Similar to Parinaud's Conjunctivitis, with Positive Bacteriologic Findings.—Schaltz, Budapest (*Arch. f. Augenheilk, liii,* H. 1), studied this case in the service of Professor Hess. The patient was a woman 62 years of age. She had been afflicted with chronic dacriocystitis on the left side for two years. A few days before observation she became ill and a tumor made its appearance beneath the left ear. The palpebral conjunctiva and the transitional fold were congested and swollen. In the inner half of the latter there were eight nodes, some discrete, others confluent, of pus-like color, measuring from ½ to 1½ mm.; some round, others pyramidal, covered by unbroken epithelium. Their position and arrangement corresponded to the follicles of the conjunctiva. There were two other isolated nodes, one upon the palpebral conjunctiva of the lower lid resembled a phlyctenule. There was a mucopurulent collection in the tear sac. The tumor beneath the ear was a purulent lymphatic gland. The morphologic and culture peculiarities were as follows: The cultured bacilli were .5 to 1.5 mm. long and .5 broad. Grown in human or animal tissues they were longer and narrower. In boullion culture the rods were much shorter and resembled cocci. In smear preparation they were usually single; rarely in chains of five or six. In several weeks' old boullion the chains were composed of from ten to twenty. They had no capsule and their ends were rounded. The most striking peculiarity was the polar staining. Usually the outer thirds were most deeply stained. In older ones the ends were stained, giving the appearance of spores. Gram's stain was negative. The rods were motionless. There were no spores. They grew well on culture materials except potatoes. They are facultative aërobia. Gelatin colonies are irregularly round, often strongly lobulated with serrated margins. The round ones are prominent; the lobulated ones flatter. They have always sharp borders; appear milk white by reflected light; brownish by transmitted light; are slightly opalescent and under 50 powers are finely granular. Gelatin stabs: The canal walls are smooth, broaden out above into a lobulated nail-head-like impression. Gelatin not liquefied. Agar cultures similar to gelatin only in the midst of old colonies there is a granular thickening. Upon Loeffler's serum the bacilli grow poorly in hardly perceptible punctiform colonies. Boullion: After twenty to twenty-four hours increasing diffuse opacity, having after a few days a white floor; after five to six days a thick membrane upon its surface, which, upon agitation, separates into coarse masses which sink to the bottom.

Milk is not coagulated. No gas or indol is formed. Old agar cultures have a foul odor. Animal experiments: The organism is pathogenic for mice; .10 to .20 c.cm. of twenty-four-hour-old boullion culture subcutaneously in a white mouse causes death in from three to four days. The spleen is found greatly enlarged, pale and brittle. The bacilli are constant in the spleen and heart blood. In the injured cornea of a guinea-pig they produced a diffuse opacity, which disappeared after twenty-four hours. The bacillus belongs to the same group as the pest, the pseudo-tuberculosis of rodents. hemorrhagic septicemia. It resembles most the bacillus gallenarius. W. Z.

PARINAUD'S CONJUNCTIVITIS.—DEMICHERI, L., Montevideo (*Archivos de Oftalmologia,* January, 1906). Girl, 9 years old, left conjunctival secretion of a few days' duration, slightly edematous and drooping upper lid; conjunctiva of upper cul-de-sac congested and showing a number of large reddish-yellow granulations, transparent and lymphoid in appearance; moderate inflammatory reaction. Eye otherwise normal. The preauricular and submaxillary glands swollen, but painless to the touch. Condition yielded to treatment: sublimate colyrium, arg. nit. cauterization and ichthyol inunctions. H. M. F.

A CASE OF PEMPHIGUS OF THE CONJUNCTIVA.—KOERBER. clinical assistant (from the eye clinic of Prof. J. Hirschberg, Berlin, *Centralblatt f. Aug.,* 1905, p. 353), reports a case of typical pemphigus of the conjunctiva, which is very rare and occurs once among 210,000 eye patients, and pemphigus of the palate and glans penis. The lower cul-de-sac was very much narrowed, and by the margin of the lower lid was in close connection with the globe by bands of connective tissue. Upper and lower lids were adherent at the inner corners. Both corneæ were clear and the interior was normal. Koerber emphasizes the following points of differential diagnosis between pemphigus and trachoma: In trachoma the formation of scars predominates over that of thread-like folds, and the corneæ rather early become pannous. The upper retrotarsal fold is involved earlier and more intensely than the lower, and the tarsus undergoes considerable changes. The etiology of pemphigus is still unknown in spite of numerous bacteriologic investigations. The prognosis is mostly unfavorable, but in this case relatively good, considering the duration of the disease for over two years. C. Z.

Primary Tuberculosis of the Conjunctivia.—Moissonnier, Tours (*Annales d'Oculistique,* September, 1905). Tuberculosis of the conjunctiva appears in different aspects. Sometimes it assumes the form of an isolated ulcer with sharply cut borders and a slightly yellow base; sometimes the form of nodules more or less numerous simulating an acute trachoma, and finally, which is rare, the form of a polypus. But under whatever form it appears it always ends in ulceration and extends to the underlying tissue, and to the primitive lesion of the conjunctiva a tarsitis is added.

The following case is reported: A child, 3 years of age, had had an affection of the right eye for more than a month. There was no history of tubercle in the family, and the child's general health was excellent. There had been no traumatism. It was first noticed that the upper lid was swollen and the preauricular gland enlarged.

There was slight ptosis of the upper lid, which was bluish and swollen. The eye was moist, but without secretion. The cornea, bulbar conjunctiva and lower cul-de-sac were normal. The tarsal conjunctiva was much congested, and scattered over it were pale granulations, rounded and separate at the middle portion, but pressed together and polygonal at the upper margin, and having much the appearance of acute trachoma granulations. At the attached border of the tarsus there was an ulcer about one centimeter in length and half a centimeter in width, sanious and of a dirty-yellow color, with slightly raised and sharp-cut borders. The preauricular gland was hard and as large as an almond. No Koch bacilli were found in the secretion of the ulcer, but in the tissue cut from its borders there were a number of giant cells. A fragment of this tissue was introduced into the anterior chamber of a rabbit, and a month passed without result, but forty days after the inoculation the first symptoms of iritis with miliary tubercles appeared, and Koch bacilli in large numbers were found in the nodules upon the iris.

Repeated scarification of the granules was followed by sublimate washes, iodoform ointment was applied three times a day and a general antitubercular treatment was prescribed.

At the end of three weeks the ulcer had filled up and was cicatrizing and the nodules were disappearing. The conjunctival lesions were nearly cured, but a decided tuberculous tarsitis appeared. The patient was then lost sight of.

As to the treatment, most authorities advise the immediate extirpation of the diseased part, but the author thinks that it is safer not to undertake this unless it is certain that it can be done completely, and not when the lesion is so generalized, as it was in this case. Curettage, he insists, should be completely abandoned on account of the danger of infecting the tissues. Injections of tuberculin have shown good results.

The prognosis is usually favorable, but should be guarded, particularly in case of the debilitated or of those who are subjects of hereditary taint. G. C. H.

SPRING CATARRH IN TURKEY.—TRANTAS (*Archives d'Ophtalmologie,* December, 1905). Trantas states that spring catarrh is more frequent in Turkey than in any other country, and calls attention to the presence of little whitish or yellowish-white spots in the pericorneal hypertrophy. They are round or ovoid and sharply defined, and, under a lens, give the impression of a colony of white microbes developed in a culture of gelatin. They are formed by degeneration of epithelial follicles, which finally are absorbed and leave cystic cavities or remain as amorphous masses. He found them in a large proportion of the cases and considered them pathognomonic.

G. C. H.

CORNEA.

CORNEAL ABSCISSION.—A REPORT OF FORTY-ONE OPERATIONS.—CRAWFORD, J. M., Atlanta (*Atlanta Journal-Record of Med.,* January, 1906), thinks that the field for the operation has been too limited. It is specially indicated in corneal staphyloma. Eyes in which suppuration has begun may be abscised without danger, unless the process has involved the surrounding orbital tissue, or already begun to extend posteriorly, so that an aseptic pocket would be difficult to obtain. Eyes so diseased or injured that they have already excited sympathetic ophthalmia, or eyes containing malignant growths, should be enucleated; shrunken eyes likewise, and those of very old or feeble patients. Abscission is often of great advantage where it is made for the cosmetic effect. Crawford does not approve of Mule's operation. The old operation of abscission was spoken of more than 150 years ago. Some thirty-five years ago it was revived by Critchett, and later was modified by Knapp, who closed the wound by external sutures. P. H. F.

THE TREATMENT OF CORNEAL ULCERS BY THE GENERAL PRACTIONER.—JONES, C. P., Newport News (*Atlanta Journal-Record of Med.,* December, 1905), calls attention to the origin of this affection from an injury or abrasion which has become infected. This possibility should be borne in mind in every injury of the cornea. The eye should be promptly irrigated with saturated solution of boric acid, or bichlorid 1 to 4,000, and kept as aseptic as possible by the use of bichlorid ointment. If the injury is as much as twelve hours old and the proper antiseptic precautions have not been taken, the wound is touched with tincture of iodin, applied by a few shreds of absorbent cotton wound around a small probe or smooth wooden toothpick. When the ulcer has declared itself, it is thoroughly curetted, and then touched with iodin. If there is no marked improvement after twenty-four hours, it is cauterized, either with carbolic acid or with the actual cautery, using a fine platinum probe. Atropin and hot applications are valuable aids at this stage. In a bad case, rest in bed is imperative. P. H. F.

PARENCHYMATOUS KERATITIS.—IRIDO-CHORIOIDAL FORMS WITH LOSS OF BOTH EYES.—BROBST, CHARLES H., Peoria (*Ill. Med. Jour.,* October, 1905), discusses the subject of interstitial keratitis, especially that form attended by irido-chorioiditis.

The clinical data is given of a case in which the left eye had been removed three years previously as a result of this disease. When first seen by the author there was a beginning interstitial keratitis and irido-chorioiditis in the right eye. Patient was placed in hospital. Local treatment consisted of leeches to temple, atropin, hot and cold applications and subconjunctival injections of salt solution and cyanid of mercury. Internally, large doses of potassium iodid.

Six weeks of this treatment showed no improvement. The hypodermic administration of cyanid of mercury in the gluteal regions was begun, and continued until ptyalism was established. Improvement in vision followed, and cornea cleared so that patient was able to walk about the streets. Mercury injections continued at intervals.

Six months later the patient suddenly developed a secondary glaucoma as a result of the diseased uveal tract. W. R. M.

Traumatic Parenchymatous Keratitis.—Ohm, Berlin (*Woch. f. Therap. u. Hyg. des Aug.*, No. 5, 1905), anent the discussion whether a traumatism can originate a parenchymatous inflammation of constitutional origin of either the injured eye or of both eyes, records the following cases: A woman, 23 years of age, with hereditary syphilis, had been struck in the right eye by a card one week previously, but no trauma could be made out. The eye, however, had been watery and painful. A typical parenchymatous inflammation followed. Two months later the fellow-eye developed a similar affection. In the second case the author removed a foreign body from the cornea of a man 32 years of age. The patient expressed the fear that a prolonged inflammation might follow as a similar result followed the removal of a foreign body from the fellow-eye two years previously (a typical parenchymatous inflammation requiring six months' treatment). The fears of the patient were realized, as three days later an interstitial inflammation, which finally involved the whole cornea down to Descemet's membrane, set in. No evidence of inherited syphilis. There was some consolidation of the right lung. A third case, without a syphilitic history, resembling the first, is given. W. Z.

Traumatic Interstitial and Disc-Shaped Keratitis.—Vollaro (*Archivio di Ottamologia* xii, Fase, 11-12, 1905) reports three cases of traumatic keratitis, in one of which the disease assumed the character of the "disc-shaped keratitis," described by Fuchs. In all cases there was a deep infiltration, apparently formed of closely agglomerated points situated on various planes, with bands of opacity in Descemet's membrane. The traumatic origin of the affection was well established and the final result was a dense leucoma. The slowness of the process and the slight reaction suggest that the infective agent could not have been very virulent. The presence of a denser halo, separating the keratitic focus from the rest of the (transparent) cornea is a point of analogy between this form and the keratis from experimental inoculation. The author thinks it is sometimes difficult to distinguish this from the interstitial keratis produced by general causes, when the signs and history of a trauma are lacking and a constitutional malady can not be definitely excluded. C. A. W.

On Keratitis Disciformis.—Peters, A., Rostock. (*Klin. Mon. f. Aug.*, 1905, No. 2, p. 535). Referring to Meller's article "On Histologic Examinations of Keratitis Disciformis" (see following abstract), in which the necrosis is considered as the consequence of an inflammatory infiltration, Peters emphasizes that the necrosis is the primary and the essential point of the process. Keratitis disciformis is a variation of herpes or of certain forms of traumatic keratitis. Peters sees in the necrosis of the deeper parts of the cornea an analogue to gangrenous herpes zoster. As set forth in his former papers, there is an intimate relation between a large class of traumatic corneal affections and herpes, given by irritation of the nerves. C. Z.

Histologic Changes of the Eye in Keratitis Disciformis.—Meller, J., assistant at the University Eye Clinic of Prof. E. Fuchs, Wien (*Klin. Mon. fuer Aug.*, 1905, ii, p. 335), gives the first histologic description of keratitis disciformis and compares it with the clinical picture of this affection as originally demonstrated by E. Fuchs (1901). The characteristic features are: One circumscribed focus of inflammatory infiltration in the cornea in form of a disc, undoubtedly due to infection. Its tendency of spreading along the surface and into the depth soon disappears, as a total necrosis of the infiltration and the morbid agents takes place. The bacteriologic investigations of Meller were negative. The result is a lasting opacity of the corneal parenchyma, and the prognosis, on account of the central location, is bad with regard to sight. Very good drawings illustrate the histologic condition. C. Z.

Three Cases of Bilateral Congenital Corneal Opacities, with Remarks Upon the Etiology of These Disturbances.—Seefelder, Leipzig (*Arch. f. Augenheilk.* liii, H. 2), gives the notes of three such cases. In the first case the pathologic diagnosis was "leucoa cornea adhaerens et glaucoma secundarium oculi sinistri; leucoma cornea oculi dextri." In the second, "phthisis bulbi dextri; macula corneæ centralis et cataracta polaris anterior oculi sinistri." The presence of corneal opacities containing vessels in the first and third cases and the total destruction of the cornea in the second he considers conclusive that these eyes in fetal life were the seat of more or less severe inflammatory processes. As to the cause of the inflammation, syphilis could be excluded; so that it was probably due to bacterial invasion. The paths of infection were either direct upon the cornea, by way of the amniotic fluid, or indirect through the blood vessels as a metastasis. The first way is ectogenetic; the second, endogenetic. The author says that theoretically the pus excitors could enter the amniotic liquid through the placenta during the pregnancy or through the intact amniotic membranes. In the first instance the action of the germs is a direct one upon the fetal eyes. The assumption of nothing more definite

than a predisposing cause, such as hereditary influences, does not clear up the matter. It is, however, unnecessary in order to explain endogenous infection to have demonstrable septic disease in the mother during pregnancy. Ectogenic corneal infection is even more difficult to explain. How are we to explain the occurrence of a lesion of the corneal epithelium (necessary for the entrance of the purulent infecting material) in the closed eyes of the fetus? Nor does the assumption of a secondary infection of the cornea from the conjunctiva help, as this membrane is even more rarely affected than the cornea. The conjunctiva was unaffected in the author's cases. He presents the hypothesis that in his cases between the time of the infection and labor that either all the germs were eliminated or that their volume was reduced, as all three mothers had had uncomplicated convalescence. The question whether the waters possess bactericidal qualities is not definitely settled. The indefiniteness of our knowledge concerning congenital inflammations of the conjunctiva and of superficial inflammations of the cornea should warn us from drawing conclusions concerning the nature and origin of clinical pictures of completed intrauterine processes.
W. Z.

Changes of the Infantile Cornea by Increased Tension.—Seefelder (from the university eye clinic of Prof. H. Sattler, Leipzig, *Klin. Mon. f. Aug.*, 1905, No. 2, p. 321), found, clinically, ruptures of Descemet's membrane in 29 out of 40 hydrophthalmic eyes. In 4 the observation was prevented by dense opacities, and in 7 he could not find any. Descemet's membrane is much less resistant than Bowman's membrane. He found at the anatomic examinations of 16 eyes, the former ruptured in 14, the latter only in 5. In some, three or four ruptures started from a common point; in others they formed concentric lines. They are of great diagnostic value, especially in cases of megalocornea, showing that the eye must have been exposed to increased pressure. The corneal curvature is also influenced by increased tension, as Seefelder proved by ophthalmometry. The average radius of the cornea of 7.7 mm. was greatly enlarged, due to flattening of the cornea, mostly in the vertical meridian in concordance with the well-known fact that in glaucoma of the adult normal corneal astigmatism disappears or becomes perverse. C. Z.

Pigment Spots in the Cornea.—Steiner, L., Soerabaya. Java (*Centralblatt fuer Augenheilk.*, 1905, p. 293), describes 2 cases observed in Javanese. In one there was a roundish junction nævus pigmentosus of about 1.5 mm. diameter at the corneoscleral junction and a brownish-black spot of ½ mm. diameter in the transparent cornea, 1½ mm. upward from the first and toward the temple.

The second case occurred in a man, aged 30, who had very many pigmented nævi in the face and was afflicted with trachoma. A marked, irregularly round pigment spot of about 4 mm. diameter was situated on the medial third of the left cornea, overlapping the corneoscleral junction by ½ mm. On closer examination it consisted of a group of confluent small spots, which were lighter at the margin than at the center, imparting to the margin an appearance of indentation. Very close to this margin minute dark spots were observed on the ocular conjunctiva and at a distance of 2 mm. a nævus of the size of a pin's head, corresponding in color and aspect exactly with the corneal spot. Their intimate relation was indicated by several small dots between them.

The microscopic examination of an excised wedge-shaped piece of the corneal nævus showed the uppermost layer of epithelium free from pigment. In the deeper layers the pigment in form of smaller or larger granules was distributed over the whole tissue or was grouped in black lines along the borders of the cells, or in lumps, or coursed in long, thin or thick ramifications over large areas. Finally, there were star-shaped pigment cells with non-pigmented nuclei. Steiner considers these nævi congenital. C. Z.

SCLERO-KERATITIS. REPORT OF A CASE OF UNDETERMINED NATURE.—JOCQS (*La Clinique Ophtalmologique,* Nov. 25, 1905). Jocqs presented the case, a woman, 21 years old, before the Paris Society of Ophthalmology. Nothing of interest as to antecedents in the way of syphilis or tuberculosis. Patient had enjoyed good health in infancy, except frequent attacks of migraine. Menstruation normal. The ocular affection from which the patient suffered commenced with a diffuse redness of the external portion of the right eye near the limbus; there was neither pain nor photophobia. A few days later, at the level of the red surface, 4 or 5 mm. from the limbus on the horizontal meridian, there appeared a small elevation about the size of a grain of millet. The appearance of this button was rapidly followed by the production of spots on the cornea, though without augmentation of photophobia. The patient's mother was unable to state the number or color of the first corneal spots. Some time afterward another scleral button, 2 or 3 mm. from the first, appeared of the same volume, without diffuse swelling of the sclera; but there was a new production of corneal spots.

The treatment up to this time consisted of the application of yellow ointment and atropin. No general medication. There had been changes in the circumcorneal vascularization, but the appearance of the sclerotic buttons and of the corneal spots had not changed. The patient was first seen by Jocqs October 23 last, and the condition was then as follows: The left eye only was diseased; there was no photophobia; from near the corneal limbus externally, but diminishing toward the commissure, there was diffuse redness. There was a narrow slate-colored zone surrounding the cornea. There were two buttons about the size of a small millet seed on the line of the horizontal meridian of the eye later, which was less red than the surrounding conjunctiva; the buttons were hard and absolutely immobile. The cornea was the site of a dozen small white spots more or less circular and from ½ to 2 mm. in diameter; these were manifestly interstitial, but of different depths, though nearer the anterior than the posterior surface. These spots were all separated from each other by transparent portions of cornea. At the level of these spots the corneal epithelium was intact; they were situated on that portion of the cornea corresponding to the sclerotic lesion. The pupil was dilated by atropin, but two posterior synechiæ demonstrated an old iritis; parenchyma of iris normal. Treatment: Two drops of 5 per cent. dionin every night with hot compresses; internally six drops of iodogenol each day. On November 6 the conditions were improved. The circumcorneal vascularization lessened; the two scleral buttons had nearly disappeared. In their place was a small white point slightly umbilicated. The corneal spots also were slightly diminished in size. Jocqs admits he was embarrassed as to the diagnostic pathogeny of the lesion, stating it is well enough known as rheumatismal sclero-keratitis, which is designated under the name of episcleritis or of scleritis, according to the intensity of the lesion and the depth of the tissue attacked. The corneal spots which are the consequence of the lesion present a definite aspect: At the level of the scleral lesion there are produced on the cornea spots ordinarily limited to the corneal border, but single, that is to say that many successive spots do not appear independently of the first if there is no further attack of the scleritis. Moreover, while the spot of sclerosed cornea which is sometimes in continuity with the scleral plaque may also be placed separately on the cornea, we do not see the successive appearance of circular independent "taches." The scleral lesion is different. The episcleral tumefaction is more marked, and this is also the case of the sclerotic button in which we do not have the limitation of it as here in the form now described and which Jocqs calls the "bouton miliare." It is not, Jocqs states, the parenchymatous syphilitic or dystrophic keratitis of Hutchinson; the corneal spots are not the same; their appearance is followed by a period of vascularization which is not so in the lesion Jocqs describes, and they are not consecutive to a sclerotic change. The conditions in Jocqs' case would make it somewhat like two cases reported by Chesneau, under name of parenchymatous keratitis, though Jocqs does not believe his case to be one of tubercular nature, a view toward which Chesneau inclines. Jocqs' case resulted favorably under dionin instillations and iodogenol and calomel. B. E. F.

GENERAL DISEASES AND VISUAL ORGANS.

Juvenile Glaucoma Simplex Associated With Myasthenia Gastrica et Intestinalis.—Green, John, Jr., St. Louis, Mo. *(Amer. Jour of Ophthal.,* October, 1905). The writer reports one case of a young woman free from hereditary ocular taint and afflicted with chronic constipation, beginning in earliest childhood, who was attacked with glaucoma simplex shortly after puberty. The failure of vision in one eye was progressive and resulted in blindness; near work was impossible on account of ocular pains and blurring; when she presented herself for treatment the vision of the fellow eye was beginning to fail.

Several months' treatment with miotics failed to check the progress of the disease. General treatment directed against the constipation and resulting in improvement in the general condition was followed by a gain in vision, ability to use the eyes, and widening of the field.

Although inferences drawn from a single case are generally of little value, the writer considers that the sequence of pathologic events seems to justify the tentative assumption that the gastric and intestinal myasthenia really constituted the cause of the ocular disease. In chronic constipation resorption of noxious material from the intestine might have given rise to optic neuritis; with inherent weakness in the lamina cribrosa excavation of the nerve head may then have taken place. Confirmatory evidence is furnished by the notable improvement in the ocular condition immediately following the re-establishment of normal intestinal function.

C. H. M.

Unilateral Mydriasis in the Commencement of Pulmonary Tuberculosis.—Bichelonne *(Annales d'Oculistique,* October, 1905). Bichelonne reports a case in which this symptom existed with slight enlargement of the palpebral commissure. The instillation of cocain did not cause any supplementary dilatation and eserin had very little effect. The mydriasis was spasmodic. The patient appeared to be in good general condition with no inherited tendency to tuberculosis and no other symptom of phthisis, but a decided induration of the apex of the lung was detected.

According to Morax and others there is no "physiological anisocoria." Changes in the visual acuity and the visual field or errors of refraction never cause a difference in the size of the pupils and if anisocoria exists it must be considered a pathologic phenomenon. When, therefore, we have eliminated the most frequent causes of irregularity of the pupils, such as traumatism, syphilis, affections of the central nervous system, and intraocular and intraorbital conditions, we should consider the probability of a commencing pulmonary or ganglionic tuberculosis. Unilateral mydriasis may be an important sign in the early diagnosis of this affection, and, the author thinks, has not received so much attention as it deserves.

The numerous relations which the sympathetic has, not only with the pleura and the pulmonary ganglia, but also with the cervical ganglia, which are often involved in tuberculosis, the many branches which the sympathetic sends to the pulmonary tissue and the connections of the inferior cervical and first thoracic sympathetic ganglia with the dome of the pleura, the apex of the lung and the lymphatic glands of this region make it easy to understand how a very slight tuberculous deposit, either pleural, pulmonary or ganglionic may irritate the sympathetic and produce a mydriasis. If the opinion of Eulenberg and Guttman that the oculo-motor fibers are situated in the periphery of the cervical sympathetic is correct, it is to be expected that a very feeble irritation may excite these fibrils.

Destree claims that unilateral mydriasis exists as a premonitory symptom in 97 per cent. of cases of pulmonary tuberculosis.

In the latter stages myosis is sometimes met with from paralysis of iris dilator fibers. G. C. H.

ON CERTAIN FORMS OF OCULAR TUBERCULOSIS.—BULL, CHARLES STEDMAN, New York. (*Med. Record,* Dec. 9, 1905). The writer points out that the eye may serve as the point of entrance of tubercular infection into the system and usually by way of the conjunctiva when there is any loss of substance of this membrane, since an intact conjunctiva can never be infected. Tuberculosis of the conjunctiva is much more often a primary disease, the result of ectogenous infection, than of infection occurring through the blood.

Although not often secondary to tuberculous disease of other parts of the body, tuberculosis of the conjunctiva is liable to be the starting point of general tuberculosis; hence early removal by the knife may lead to a cure.

Tuberculosis of the conjunctiva is a rare affection and is generally secondary to nasal tuberculosis; the majority of cases occur at puberty; the conjunctiva of the lids is implicated more frequently than that of the globe; it is usually unilateral. As the disease extends it invades the ocular conjunctiva, the cornea, and later the interior of the globe; then the preauricular glands, and sometimes the cervical and submaxillary glands.

"Its first appearance is characterized by small miliary nodules in the palpebral conjunctiva, which soon ulcerate and tend to coalesce. The conjunctiva is generally thickened, and in the subconjunctival tissue are found similar nodules, which have not yet ulcerated. The ulcers are ragged and the bottom looks 'worm-eaten.' The nodules vary in size, and as time goes on they grow and look like the hypertrophied papillæ, being accompanied by an extensive growth of granulation tissue. The eyelid becomes thickened, and there is a scanty mucopurulent discharge. There is usually but little pain.

"The diagnosis is not always easy, and the disease must be differentiated from trachoma, chancre, and epithelioma. The bacillus is not always to be found, either in the secretion or in microscopic sections of the tissue, and when not found, inoculation experiments on animals should be instituted, for these will prove the diagnosis when the bacillus has not been found in the tissues. The injection of tuberculin in all doubtful cases is often a decided aid to diagnosis. The course of the disease is essentially chronic. The prognosis of course depends on the possibility of the destruction or removal of all the diseased tissue. When there has been total destruction of the conjunctiva, even over a limited area, this is not practicable. The idea has been suggested that tuberculosis of the conjunctiva might act as a focus for the dissemination of a general infection, but we have no absolute proof of this."

Regarding treatment, the writer advises extirpation with the knife or cautery if the nodule or ulcer is small. He has tried tuberculin injections, but always without success. He has had no experience with the *x*-ray treatment, though some cases have been reported as successfully treated with this method. The reaction from repeated injections of tuberculin is sometimes so severe that it is wise, at least in the beginning, to limit the dose to two or three milligrams.

Tuberculosis of the cornea and of the sclera, exceedingly rare, are considered. When the affection involves the iris, it may occur in two forms—either as disseminated growths, or as a solitary tuberculous mass; both varieties are described.

"The diagnosis depends partly on the character and course of the lesion, and partly on family and personal history. Tuberculin injections are a decided aid to the diagnosis. The disease must be distinguished from syphilitic gumma and from sarcoma. The latter usually appears at a later period of life and grows more slowly. If a solitary growth is found in the iris, without any signs of inflammation, and if syphilis can be absolutely excluded, the test by tuberculin injections should be made, and if the reaction occurs, treatment may be begun by tuberculin injections, though in the writer's hands this method has given no satisfactory results. It is not wise in these cases to attempt the removal of the single nodule by iridectomy, on account of the danger of the more rapid spread of the disease. In all cases of multiple growths, the eye should be enucleated before perforation has occurred, provided there is no evidence of the existence of other foci of disease elsewhere in the body. It was formerly believed that tuberculosis of the iris was a primary affection, and as such necessitated an immediate enucleation of the eye, in order to prevent a general infection. But there is now a wide-spread belief that tuberculosis of the iris is also a secondary infection, and hence enucleation is not always indicated."

After describing tuberculosis of the chorioid, retina and optic nerve, the paper gives the following general conclusions:

"It is doubtful if any case of intraocular tuberculosis is ever a primary disease. In case of doubt, or of very difficult diagnosis, the injection of tuberculin is an efficient aid to diagnosis. There is a general reaction in at least 85 per cent. of the cases, and some local reaction in about 50 per cent. of the cases. As a method of treatment, both the old and the new tuberculin have proved practically useless in the writer's experience. It is a remedy which needs careful watching. Surgical intervention in intraocular tuberculous conditions of the eye should seldom be done, unless there is considerable pain which tells on the patient's health, because the disease is not a primary one, and hence incision would remove only one focus of the disease." C. H. M.

A Clinical Study of Lepra Ophthalmia.—Grossman, Karl, Liverpool *(Brit. Med. Journ.,* Jan. 6, 1906). The writer gives an account of observations made at the Leper Hospital in Laugarnes, Iceland, during two visits made for the purpose in 1901 and 1904;

these relate not only to the frequency of leprous affections of the eye and adnexa, but also in the changes in the course of the three years' interval. Altogether eighty patients were seen. During the time between the two visits about one-third of the patients had died. Notes of thirty-nine cases are given.

Since the leprosorium has been able to provide a sort of non-compulsory semi-isolation for sixty inmates a decrease of 25 and 33 per cent. of cases has resulted, and there is every reason to hope that the disease will die out in Iceland at a not too far distant date. In Iceland, as elsewhere, the nodular form (lepra tuberosa) is both more plentiful and severer than the nervous form—called, not very happily, lepra anaesthetica. Of the fifty-nine patients seen in 1901, thirty-four suffered from nodular and twenty-five from the anesthetic form. The progress of the disease is more rapid and more pernicious in the nodular form, both generally and as far as opthalmic leprosy is concerned; in three patients suffering from ocular signs of lepra anaesthetica, no progress of the disease could be detected.

"With regard to ophthalmic leprosy, I come to the conclusion, from observations made in Iceland and elsewhere, that in lepra tuberosa the eyes become specifically affected in all cases, provided the patient live long enough, whereas in lepra anaesthetica the eyes may remain unaffected if the nerves supplying the adnexa of the eye remain free. The nodular form of leprosy generally affects the adnexa first, supercilia and lids, and attacks the eye itself later, though the eye may be affected while no nodular infiltration of the lids is present.

"When the eye itself is the seat of the leprous infiltration, or more accurately, when the episcleral tissue is attacked, the appearance is so characteristic that it can not be mistaken for anything else. The pericorneal region of the sclera generally in a quarter or half its circumference becomes a pale, greyish-yellow color, quite anemic, and the slightly translucent and raised part looks like ivory. This infiltration has a tendency to spread, especially laterally, so as gradually to surround the whole cornea, but it also often encroaches on the cornea itself, which therefore becomes opaque in the affected region.

"The anesthetic form of leprosy has no such characteristic or specifically leprous appearance; the affection of the fifth nerve produces anesthesia of the conjunctiva, and even the cornea, and if the facial nerve is attacked, wholly or in part, lagophthalmos results, as well as all the consequences of the eye being unprotected from injury.

"With regard to the treatment, there is no question about the possibility of giving great relief in individual cases by treating the various disturbances symptomatically. Suggestions could be given only under the existing circumstances, the patients not being under my own care. There seems to be hardly any doubt that the spread of the leprous infiltration can be treated, if not arrested, in a certain direction by the creation of a barrier of cicatricial tissue, such as is produced by a corneal or pericorneal incision, for the purpose of arresting the tendency of an episcleral infiltration before it spreads into the cornea proper." C. H. M.

TWO CASES OF SUBPERIOSTEAL HEMORRHAGE OF THE ORBIT FROM SCURVY.—MEDING, C. B., New York (*Archives of Ophthalmology*, November, 1905), reports two cases of subperiosteal hemorrhage of the orbit occurring in infants. Both cases recovered promptly when the patients were placed on the proper hygienic and diet treatment.

There were no gum symptoms present in either case, and in the first case reported a blood examination did not show marked deterioriation.

Attention is called to the fact that subperiosteal hemorrhage, which is a late symptom in scurvy of the adult, is one of the earliest in the child, and that gum symptoms and blood changes may be absent. W. R. M.

EYE-SYMPTOMS OF INFANTILE SCURVY. A CASE WITH EXTREME PROTRUSION OF THE RIGHT EYEBALL, SHOWN BY AUTOPSY TO BE DUE TO RETROBULBAR HEMATOMA.—SNOW, IRVING, Buffalo (*Archives of Pedriatrics*, No. 8, 1905), reviews the literature of a condition which receives small notice in the text-books on ophthalmology. Of 340 cases of scurvy collected by the American Pediatric Scoiety, eye symptoms were mentioned in forty-nine; a swelling in nine; protrusion of the eyeball in eighteen; both symptoms in twenty-two. In the six autopsies reported, in none was an examination of the eye made. Barlow says, "A remarkable symptom in one or both orbits is not rare. Suddenly, without premonitory sign or appreciable cause we find a moderate exophthalmos, with the globes turned downward. This symptom appears and augments for twenty-four hours. When it has reached its acme, one finds a deep ecchymosis and thickening of the superior lids, due to a hemorrhagic effusion. Both orbits may be affected, but successively, and in an unequal manner. The proptosis may be only slight. There is no increase of intraocular tension, or hemorrhage into the deeper parts of the eye. The eyeball is freely movable, not anchored by an inflammatory exudation, as in orbital cellulitis. The hemorrhage effusion into the eyelids affects the deeper parts; the conjunctiva of the lid and globe are only occasionally affected." Sudden exophthalmos in a baby should at once excite suspicion of scurvy. It may, in fact, be the first indication of the disease. The rapidity with which the proptosis occurs suggests a hemorrhagic origin. It is interesting to note that so acute and experienced an observer as Dr. Nansen looks on adult scurvy as a disease not due to the absence of a certain element in the food, but to the presence of ptomaines in badly preserved salt beef or other pickled foods. He believes that with sterilized foods, and properly given, there would be no scurvy, and that orange and lime juice are unnecessary. Caillè also believes that the disease in adults, as well as in children, is due to ptomaine poisoning. P. H. F.

A CASE OF CEPHALIC TETANUS FOLLOWING A CONTUSION WOUND OF THE OUTER CANTHUS.—RAMSAY, A. MAITLAND, M.D., Glasgow (*The Ophthalmoscope,* November, 1905). This woman, aged 23 years, was admitted to the hospital for a suppurating wound of the external canthus, inflicted four days previously by a walking stick. Stiffness of the lower jaw began three days after admission, and four days later the stiffness was so great as to excite suspicion of tetanus. The following day the trapezius became involved. Bacteriologic examination of the dicharges from the wound showed tetanus bacilli in large numbers. Injection of antitetanic serum was begun at once. Laryngeal spasm set in, and, in addition to the serum chloral was prescribed in large doses. Gradual improvement took place. She was discharged as cured fifty days after the beginning of the treatment. The serum was administered seven times, a total of 150 cubic centimeters being injected. Three thousand grains of chloral was given during this time to secure rest and sleep. Special attention was given to the nourishment of the patient and the bowels were kept active. M. B.

FATAL SEPTICEMIA DUE TO OPHTHALMIA NEONATORUM.—STEVENS, E. W., Denver, Colo. (*Ophthalmic Record,* November, 1905). The mother of the child was found by Dr. Moore to have gonorrhea while pregnant, but she could not be induced to take treatment as she should. When the child was born it soon developed gonorrheal ophthalmia. This was treated by the instillation, every three hours, of 25 per cent. solution of argyrol and cleansing of the conjunctiva every hour with boric-acid solution. The improvement in the ophthalmia was satisfactory. In twelve days the discharge of pus had ceased, the conjunctivæ smooth and corneæ clear. About this time redness and swelling was noticed of the second metacarpal articulation of the ring finger. On the next day the right knee was red and swollen. Temperature 101° F. Patient restless. Other major joints soon became involved. Temperature 104°. Examination of the fluid from one of the joints showed gonococci. Patient died 17 days after the onset of the ophthalmia. M. B.

On the Occurrence of Amyloid Disease in the Eye and the Ocular Vessels.—von Michel, J., Berlin (*Zeitschrift fuer Aug.*, 1906, xv, p. 13), examined the eyes of a moribund patient affected with granular atrophy and amyloid disease of the kidneys, 12 hours before death, ophthalmoscopically and found total hemorrhagic detachment of the retina, except a small medial portion, glaring white patches in the intensely greyish white opaque retina. The autopsy revealed shrunken kidneys, giving amyloid reaction, intense sclerosis of the cerebral arteries and internal carotid, anemia and edema of the brain. The central retinal artery and its branches and the chorioidal vessels showed endarteritic proliferations which participated in the general amyloid degeneration. Amyloid degeneration in the eye occurs in 2 chief forms: 1, limited to the eye; 2, combined with general amyloid degeneration. Local amyloid has been ascertained in the cornea after being injected with venous blood of anthrax, in cicatrices, staphylomas and ribbon-shaped opacities of the cornea, in the vitreous and the walls of the chorioidal vessels after hemorrhages, and in the walls of the retinal vessels in phthisis bulbi.

Amyloid of the eye in general amyloid degeneration was occasionally encountered in the otherwise normal walls of the ciliary arteries and choriocapillaris. In three of the positive cases a moderate degree of nephritis existed.

The histologic conditions in Michel's case are illustrated on a colored plate. C. Z.

A Case of Tuberculous Glaucoma.—Hirschberg, J., and Ginsberg, S., Berlin (*Centralbl. fuer Augenh.*, 1905, p. 323). In rare cases affections of the whole organism may give rise to chronic glaucoma, e. g., syphilis and tuberculosis. The latter was found to be the probable cause of glaucoma in a woman, aged 30. After iridectomy V. = 5/7, visual field normal.

The microscopic examination of the excised piece of iris by Ginsberg disclosed an inflammatory new formation of tissue in the otherwise not altered iris, viz., granulation tissue, not vascular, with degeneration of nuclei, epithelioid and giant cells. On account of the absence of typical tubercles, of cheesy degeneration and tubercle bacilli, the diagnosis of tuberculosis of the iris was, however, not absolutely certain. C. Z.

Hydrophthalmus, Glaucoma and Iridectomy.—Schoen, Professor, Leipzig. (*Centralblatt fuer Augenh.*, 1905, p. 289). In a boy, aged 4 years, Schoen performed, 25 years ago, iridectomy on each eye for buphthalmus. The wound of right eye healed perfectly, of left eye with cystoid scar. The morbid process, however, continued its course undisturbed in both. The eyes grew larger, and the optic nerves were excavated; the right eye was blind at the age of 10. Vision of left eye is still preserved, apparently in consequence of the cystoid cicatrization. The cyst is almost as large as the eyeball and seems constantly to grow. It is, as it were, a safety valve against the rise of intraocular pressure. Schoen attributes the hydrophthalmus to congenital lack of the meridional fibers of the ciliary muscle, which in the normal eye intercept by their elasticity the intraocular pressure from its immediate impact on the inelastic sclera.

In view of the insufficient effect of iridectomy the case suggests the idea to perform a corneoscleral section in glaucoma and, by preventing its cicatrization, to favor the formation of a conjunctival cyst. C. Z.

On the Filtration of the Eye and its Role in the Pathogeny of Glaucoma. An Answer to the Criticism by Prof. Th. Leber.—Uribe y Troncoso, Mexico (*Annales d'Oculistique*, October, 1905). Troncoso, in a long article, continues the discussion with Leber, which has been referred to in previous numbers of Ophthalmology, and which is getting to be somewhat monotonous. He discusses the mechanism of the instrument invented by Leber and the technic of the experiments, and reaffirms his faith in the albumin theory of the pathogeny of glaucoma. In answer to Leber's objection that he had found more albumin in eyes with tension diminished by intraocular inflammation than in glaucomatic eyes, Troncoso maintains that, though the tension is increased in the first stage of these diseases by an accumulation of albumin and fibrin in the aqueous humor, in the second stage inflammatory albuminoid products cease to be thrown into the humor, while the ciliary body is much altered and the aqueous humor is secreted in much smaller quantity. The exudates in the vitreous become organized and the new-formed connective tissue ends by detaching the ciliary body, the retina or the chorioid and the eye atrophies because the nutritive currents are arrested. G. C. H.

Acute Glaucoma Consecutive to Contusion of the Ocular Globe (Traumatic Glaucoma).—Villard (*Annales d'Oculistique*, October, 1905). Villard reports three cases of typical acute glaucoma following contusions of the eye and refers to twenty-four others, which are all that he has been able to find after a careful search in literature.

The affection, therefore, is rare. It is not peculiar to old age. The ages of the patients varied from 6 years to 66 and there were more in young subjects than in old.

In all the cases reported, traumatic glaucoma had been a primitive affection, occurring suddenly in subjects who before the accident had never presented any symptoms of glaucoma. The time after the traumatism at which it appears varies from a few hours to several days. In one case it appeared nine days and in another nineteen days after the injury.

It may be preceded by intraocular hemorrhage, but this is often absent. Rather frequently it has been accompanied by a subluxation of the lens.

The pathogeny of traumatic glaucoma has not been definitely determined. According to some authors, the hypertension is of nervous origin; according to others, the mechanism of the glaucoma should be sought principally in the modification which the aqueous humor undergoes in consequence of violent contusions of the globe. The aqueous humor is charged with a high proportion of albumin which transudes through the walls of the vessels of the ciliary body paralyzed by the traumatism, and this albumin obstructs the normal paths of ocular excretion; others maintain that the increased tension is the result of a traumatic cyclitis which obstructs the angle of filtration by causing a swelling of the ciliary body and at the same time a hypersecretion of aqueous humor more or less altered in its chemical composition; according to still others, the obstruction of the paths of excretion, in cases accompanied by intraocular hemorrhage, may be caused by pigmentary débris or fibrin from the extravasated blood. Some authors think that glaucoma is consecutive to a slight subluxation of the lens which, pressing at a point on the ciliary zone, provokes a reflex hyperemia of the whole uveal tract and a mechanical obstruction of the paths of excretion, but this explanation is not applicable to all cases, since in some there was entire absence of luxation. Finally some claim that traumatic glaucoma is to be explained, not by an obstruction of the paths of excretion, but rather by an obstruction of the suprachorioidal lymphatic spaces following a hyperemia and serous exudation of the chorioid. This last explanation has the support of the only histologic examination that has been made.

The author thinks that there are not enough clinical and pathologic facts to decide among these diverse pathogenic explanations.

each of which may contain a certain degree of truth or be applicable to a particular case. The question of pathogeny remains obscure.

In all the cases the classic picture of acute glaucoma has been observed. Traumatic glaucoma has occurred in all degrees of severity, from a simple transient increase of tension to a well-developed and malignant attack.

The prognosis is very variable. In a large proportion of the cases a complete and lasting cure has been obtained, while in many a loss of vision has been reported.

The medical treatment includes strong myotics, hot compresses, local bleeding and dionin, and generally bromids, chloral, antipyrin, quinin, etc., may be given.

In the surgical treatment, iridectomy is the operation of choice, though it appears from reported cases that sclerotomy or even simple paracentesis acts more decidedly in traumatic glaucoma than in the spontaneous form. G. C. H.

Antiglaucoma Iridectomy and Massage of the Eye.—Wicherkiewicz (*Annales d'Oculistique,* August, 1905). The author urges the importance of massage of the eye after iridectomy to prevent too rapid cicatrization and promote the formation of a filtrating cicatrix. He thinks that sclerotomy has a certain value in simple glaucoma, but is not the operation of choice, and that, in inflammatory glaucoma, we should always resort to iridectomy. He claims that a mixture of eserin, pilocarpin and cocain gives much better results than eserin or pilocarpin alone and in inflammatory cases adds a weak solution of adrenalin. He considers syphilis a frequent cause of glaucoma and says that specific treatment will sometimes cure cases that have resisted iridectomy. G. C. H.

HISTORICAL.

The Ophthalmologic Practice of Daviel, 1735 to 1744.—Pansier (*Annales d'Oculistique,* November, 1905). We are sorry to learn from this account of Daviel's professional career that he advertised extensively and shamelessly in the newspapers, and that the secret of his salves and lotions was a valuable asset of his window. He seems to have been a disciple of Taylor of London, who, in the course of his various perigrinations, spent a month in Marseilles and gave him points in eye surgery and in the art of advertisement. *Tempora mutantur:* No county medical society in any wildcat region could now afford to have his name on its register.

G. C. H.

INJURIES.

Fragments of Glass as Foreign Bodies in the Lens.—Laqueur, Strassburg (*Arch. f. Augenheilk.* liii, H. 2), reports two such cases. In the first instance the foreign body remained inactive for 3¼ years. Then cataract slowly developed, taking three years to become ripe, and then only after preliminary iridectomy and discission. A successful linear extraction was performed. In the second instance the splinter of glass had entered through the sclera and ciliary body into the posterior part of the lens. Nearly a year later V. was normal and no change had occurred in the lens. The patient had had monocular diplopia for several months. The accommodative power of the eye was 2 D. less than its fellow. The author believes the late changes in the lens in the first case to have been due to chemical processes. He points out that glass is more soluble than it is commonly thought to be, and he believes that the sodium silicate was gradually dissolved and freed and in the course of years caused a general opacification of the lens. W. Z.

INJURIES OF THE EYE FOLLOWING PARAFFIN INJECTION IN THE NOSE.—UHTHOFF, W., Breslau (*The Postgraduate,* January, 1906. See also *Berl. Klin. Woch.,* No. 47, 1905). Uhthoff reports two cases. The first, a woman, had saddle nose either from an injury or syphilis. Three injections of paraffin were made at intervals of eight and five months. The paraffin used had melting point of 43° C. and was injected at 46° to 47°. During the third injection of a quantity somewhat over a gram, the patient noticed suddenly that the left eye had become blind. There was no pain, but some lacrimation and several attacks of vertigo on her way home. The ophthalmoscopic picture was of embolism of the central artery of the retina. Dr. Uhthoff thinks it certain that the occlusion of the artery was caused by a small particle of paraffin, and it must be assumed that the particle went through the pulmonary circulation first. He does not accept the explanation of Hurd and Holden, who presuppose a persistent foramen ovale permitting direct access to the arterial circulation, nor of Elschnig, who thinks that during the injection paraffin might find its way into a peripheral branch of the corresponding ophthalmic artery, taking its way centripetally at first and then entering the central artery. Embolism, especially pulmonary embolism, has been observed a number of times after the use of soft paraffin with melting point up to 45°. The use of hard paraffin, even with melting point above 50°, has some danger also.

The second case reported is that of a man, æt. 57, with saddle nose from the kick of a horse. Three injections of paraffin, probably soft, were made near the end of 1904. The result was satisfactory up to the end of the following February, when the patient, in a profuse perspiration, felt a sudden itching and pressure in the eyes which he, therefore, rubbed. The lids and surrounding portions of the face became swollen and inflamed and there was an utter inability to open the eyes. It was proved by microscopic examination that inflammatory proliferation was caused by penetration of the paraffin into the eyelids. Only by strong pulling on two lid retractors could it be seen that the eyes were intact and movable. At various sittings small pieces were cut from the lids, and he was by this enabled to use his eyes. The firm growths in the lids were found to extend in various directions into the surrounding tissue, and the superficial strata of the epidermis were found firmly adherent to them. Microscopically there were no large masses of paraffin found, but only drops or somewhat larger masses lying in vacuoles, around which were dense inflammatory cell infiltrations, giving the tissue a retiform appearance. The inflammatory infiltrated mass contained many polynuclear giant cells. The enormous swelling of the lids then was caused not by the quantity of paraffin *per se,* but by the inflammatory new formation of tissue secondary to the migration of the paraffin into the lids. Uhthoff considers that were hard paraffin used the process would be much more slow and much less extensive. E. E. J.

Ocular Accidents Consecutive to Prothetic Injections of Paraffin in the Nasal Region.—Rohmer (*Annales d'Oculistique,* September, 1905). Rohmer reports a case of blindness of one eye following injection of paraffin in the nasal region and refers to several other recorded cases. He attributes the accident to thrombosis of the ophthalmic vein, though some cases have been supposed to be due to embolus of the retinal artery. The latter would require an open foramen ovale, as otherwise the embolus would be arrested in the lungs, while there is a free current by way of the internal angle of the eyelids and a large branch of the facial vein to the ophthalmic vein.

The author thinks that the danger of the accident can be reduced to a minimum by using a paraffin of not too high a fusion point—not more than forty-one degrees or forty-two degrees, injecting slowly not more than a centimeter and a half at a time and limiting its diffusion by pressure with the fingers of an assistant.

G. C. H.

A Case of Traumatic Disease of the Macula Lutea.—Wisselink, G. W., assistant (from the eye clinic of Professor Straub, in the University of Amsterdam. *Klin. Mon. fuer Aug.,* 1905, ii, p. 385). A policeman was thrown from his falling horse forward into the sand. Immediately afterward he saw everything misty. On the sixth day he came to the clinic, where central scotoma in both eyes and a very small hemorrhage between right optic nerve and fovea were ascertained. The immediate surrounding of the left fovea was slightly gray. Later on, very fine lines, composed of small dots, in form of radial striations, were noticeable. The different shapes of the scotomata in right and left eye showed that the ruptures in the macula, caused by the contusion of the posterior pole of the eye through direct pressure from in front, were in the right eye radial, in the left circular. Wisselink attributes the radial ruptures to an intense stretching of the tunics at the posterior pole, the circular ruptures to the change of power of resistance of the retina within the foveal ring. He assumes that in the intermediate strata of the retina a separation took place in accordance with the lacunar formations described by E. Fuchs. C. Z.

ON THE LATE DIAGNOSIS OF TRAUMATIC DETACHMENT OF THE RETINA.—ONKEN, Wilhelmshaven (*Zeitschrift fuer Augenh.,* 1905, xiv, p. 165). A man, aged 19, complained that he could not see in his right eye for 2 days. There was a large floating detachment of the retina upward, later on downward. The patient, being questioned with regard to an injury, stated that 5 weeks ago he received a blow by the handle of a harrow. Probably this was directly followed by edema or a slight detachment of the anterior portions of the retina, without arousing the attention of the patient, who always had very poor vision, being myopic from early childhood (—15 in left eye). Onken recommends, after injuries by blunt objects, very careful ophthalmoscopic and perimetric examinations, especially in eyes predisposed to detachment, for changes, the diagnosis of which may be of great prognostic and therapeutic importance.

C. Z.

ISOLATED INJURIES OF THE EXTERIOR OCULAR MUSCLES.—BERGER, C. (from the eye clinic of Professor Laqueur, in the University of Strassburg i. E., *Klin. Mon. fuer Aug.,* 1905, ii, p. 480), reports 2 cases of traumatic paralysis of the internal rectus, one of the inferior rectus, one of the superior oblique, and 2 of the external rectus, all caused by more or less pointed, wedge-shaped objects, entering between eyeball and orbital wall, with contusion of the former.

As to the prognosis, Berger says that complete separations of the muscles entail lasting paralysis with secondary contracture of the antagonists. Partial lacerations may, like partial resections, heal after some time with perfect restoration of function. Berger recommends to postpone the suture until the ecchymosis is absorbed and a complete division of the muscle is ascertained. The absorption in his case was materially accelerated by internal use of iodid of potassium. C. Z.

Some Remarks Concerning the Conservative Treatment of Severe Ocular Injuries.—Allport, Frank, Chicago (*Central States Med. Monitor,* December, 1905), advises against that extreme conservatism in the treatment of severe ocular injuries by which an eye which has been so severely injured that all sight has been destroyed, and which, by allowing it to remain, becomes a continual source of anxiety to the patient, and may at some future time give rise to trouble in the fellow eye.

The author refers especially to that class of laboring people who are most susceptible to eye injuries and who are likely to neglect those premonitory symptoms which may indicate involvement of the second eye.

Allport believes that much damage may be done by the forcible extraction of a foreign body from the posterior segment by means of the Haab magnet, and in many of those cases believes the preferable method of extraction to be through the sclera, posterior to the "danger zone."

He also states that the giant magnet and *x*-ray can not be relied on always to demonstrate the presence of steel within the eye, that the patient will sometimes not experience any sensation of pain when the eye containing a piece of steel is brought in contact with the magnet, and the *x*-ray will sometimes fail to reveal the presence of a foreign body. The author outlines his methods of treating infected wounds of the eye. W. R. M.

Unilateral Abolition of Light Reflex, with Persistence of Accommodative Reflex of Traumatic Origin.—Cosmettatos, Athens (*Archives d'Ophtalmologie*, November, 1905). Usually the light and accommodative reflexes coexist and the abolition of one is accompanied by that of the other, but it occasionally happens that one is abolished while the other remains. The cause of this partial abolition is referred to a lesion of the oculomotor, either at its nucleus or during its course, but traumatic lesions of the iris may also cause it, as is shown by the case reported. A priest, 60 years of age, had received a blow on the right eye, in consequence of which his vision was disturbed. The pupil was partially dilated but round, and there was no rupture of its margin. The light reflex was completely abolished, while the accommodation reflex was normal. The consensual reflex was also abolished and myotics had no effect. The iris oscillated and the lens was found to be dislocated downward and inward.

The abolition of the light reflex, of nuclear origin, without abolition of the accommodative reflex, occurs in certain affections of the nervous system, particularly in tabes. To explain it a subdivision of the nucleus for iris reflex is supposed. A partial lesion may abolish one of these reflexes without disturbing the other; but this hypothesis has not been positively confirmed by pathologic and anatomic observations.

Lesions occurring in the extracerebral course of the oculomotor show that this nerve must contain two separate fasciculæ, one belonging to the light reflex and the other to the accommodative.

To explain the case reported above we must suppose that two kinds of nerve fibrils exist in the iris—one distinct to the accommodation and the other to the light reflex.

This separation of the nuclei and of the nerve fibers, even if it has not been demonstrated anatomically, must be admitted to explain the clinical facts. G. C. H.

Ocular Injuries.—Black, Melville, Denver (*Ophthalmic Record,* December, 1905). This paper was intended for the general practitioner and deals largely with the subject of ocular injuries in so far as the physician is capable of dealing with them. Emphasis is made of the necessity for cleanliness in dealing with simple wounds of the cornea. The use of oil in the eye as soon as possible after a burn of the globe is strongly advocated. Iced cloths for the prevention of infection in penetrating wounds he considers of the greatest possible value. He believes if the practitioner would institute this treatment at once in every case of penetrating wound of the globe that the specialist would see very few cases of suppurative ophthalmitis. He is strongly opposed to cocain as a remedy and believes it should be used as a local anesthetic only. M. B.

Apoplexia Sanguinis Retinae (v. Michel), or So-called Hemorrhagic Retinitis After an Accident.—Hillemanus, Duisberg, and Pfalz, Dusseldorf (*Klin. Mon. fuer Aug.,* 1905, ii, p. 373). A large piece of wood flew against the right eye of a man, aged 42, without causing an external injury or hindering him from continuing his work. Ten days later he only could count fingers at 3 to 4 m. distant, and the eye presented the ophthalmoscopic picture of intense congestion of the central retinal vein, haziness of the disc, ischemia of the central artery, i. e., the aspect of thrombosis of the central vein, lasting 4 months. A vascular affection was diagnosed from the heart dullness extending to the left and the tortuosity of the temporal arteries.

Ten months later almost complete recovery had taken place, with V. = 5/12 and normal visual field. Therefore, a gradually increasing hemorrhage into the sheath of the optic nerve from a fissure of the optic canal seemed more likely to have been the cause of the intense disturbance of circulation in the retina. The result shows that the prognosis must be guarded in such cases and must not be pronounced unfavorable even after the affection has lasted for months. C. Z.

Small Ruptures of the Corneoscleral Border.—Fuchs, C. (*Medizinische Blatter,* Oct. 26, 1905). Ruptures of the outer coats of the eyeball are considered solutions in continuity produced by blunt injuries to the eyeball. Ruptures on the corneal border are usually of very small dimensions and are often not considered as such. Typical scleral ruptures are usually 8 to 12 mm. long, while ruptures on the corneal border are usually only 2 to 4 mm. long. These ruptures are usually situated either very near to or in the limbus itself or partly in the cornea; their direction is either directly upward or upward and inward; the iris is, as a rule, prolapsed, the pupil irregular, the zonula of Zinn and even the lens capsule may be torn. Scleral ruptures occur usually in older people, whereas ruptures on the margin of the cornea occur more often in younger people.

The prognosis is, as a rule, favorable. It happens very rarely that a rupture is followed by an infection of the interior of the eye.

The treatment consists of an excision of the prolapsed iris. If the iris is not excised, vision becomes impaired by the irregular curvature of the cornea and the development of a higher degree of irregular astigmatism; the scars later become ectatic and produce an increased tension which may lead to blindness. J. G.

Fracture of the Canalis Opticus.—Pollak, Josef, Dr. (*Wiener Medizinische Wochenschrift,* Jan. 13, 1906). Examining frequently with the ophthalmoscope in connection with the pupillary reaction the visual field, the sensitiveness of the region of the injured eye and its power of mobility, we can determine not only whether the optic nerve is injured, but also the seat of lesion.

Fissures are mostly found in the inner and upper orbital wall and extend into the optical canal; fissures in the outer and lower orbital wall which extend to the superior or inferior orbital fissure are very rare.

The lesions in the nerve are produced either by the bone fragments themselves or by hemorrhages into the sheath of the nerve or into the substance of it; very frequently hemorrhages may also take place into the orbital tissue, which may lead to swelling of the lids or protrusion of the eyeball.

If the nerve is totally severed a lasting amaurosis will follow. Loss or diminished pupillary reaction or direct illumination or preserved consensual reaction on the same side prove that the motor fibers of the oculomotorius nerve are intact, and the centripetal part of the reflex arch is injured, thus proving a lesion in the tract of the optic nerve.

The ophthalmoscope shows whether the lesion of the optic nerve is in front of or posteriorly to the entrance of the arteria centralis retinæ. Injuries of the nerve in the optic canal lead, after two or three months, to a descending atrophy of the optic nerve.

The author then goes on to cite the histories of three cases of fracture of the canalis opticus.

The main point to be ascertained in these cases is whether the lesion of the optic nerve is situated outside of the canal or whether anteriorly or posteriorly. J. G.

INSTRUMENTS AND METHODS OF EXAMINATION.

Celluloid Shells for Eye Bandages.—Schreiber, Magdeburg (*Wochsch. f. Therap. u. Hyg. des Aug.*, No. 6, 1905), claims for this appliance that it is lighter than aluminum, that it is not affected by sublimate and oxycyanid solutions, that it may be cleansed readily with ether, turpentine or carbo-alcohol. It may be used in either the open-wound treatment or with gauze and cotton. The upper and lower margins of the coquille are perforated for ventilation. It is fastened over the eye by a piece of adhesive plaster extending from the forehead to the cheek. W. Z.

The Uses of Berger's Binocular Loupe.—Haltenhoff, Geni. (*Die Ophth. Klinik,* No. 22, 1905), while realizing that this apparatus is being used by many ophthalmologists, thinks that its advantages are not sufficiently appreciated. It is of practical value to the dermatologist, rhinologist and dentist, in dissecting and in anatomico-histologic work. He employs the spectacle form of from 6 to 7 D. for the removal of foreign bodies from the cornea, especially colorless ones; in the introduction of conical sounds into minute puncta and in the removal of fine cilia; in the curettement of small tarsal infarcts, ulcers, etc.; in operating for secondary cataract and in iridectomy for glaucoma with narrow anterior chamber. In the study of pathologic conditions in the anterior segment of the eye he finds of especial value the opera-glass form, with dark-chamber attachment and lenses of from 15 to 18 D. Darier has attached a small electric lamp above the lenses for illuminating the field of observation. W. Z.

A New Advancement Forceps.—Stevenson, Mark D., Akron, Ohio (*Ophthalmic Record,* December, 1905). These forceps are designed to rest in such manner that they will not pull on the muscle and cause pain. The handle is curved on the flat so as to go over the nose or temple and there find an easy resting place. M. B.

A New Needle Holder for the Ophthalmic Surgeon.—Stevenson, Mark D., Akron, Ohio (*Ophthalmic Record,* November, 1905). The handle is long and round like a pencil. The bites for the needle are very short and small. The lever is short and with a good-sized thumb rest. There is no catch. The author believes that a catch is a disadvantage, no matter how perfectly it works. M. B.

A New Model Chalazion Forceps.—Francis, Lee Masten, M.D., Buffalo (*Ophthalmic Record,* December, 1905). The author claims the forceps has advantages over other models in common use, in that the curve of the upper blade is so placed as to permit clamping on the lid without crushing the ciliary margin. M. B.

Influence of the Size of the Pupil in Skiascopy and a Pupil Stop.—Jackson, Edward, M.D., Denver (*Ophthalmic Record,* December, 1905). Accurate measurements depend on observations made near the point of reversal. Near this point the light area on the fundus appears enormously magnified, and to give definite indications when so magnified it must originally be very small and definite. In order to control the size of this light area, the author has designed a pupil stop. It is made of metal with a hole at each end. These openings are circular and are respectively five and six millimeters in diameter. The bar connecting them serves as a handle. It is essential that the opening should be held in front of the center, or visual zone, of the pupil. Unless this precaution is taken, the value of the procedure is defeated. M. B.

On an Apparatus for Fixation of the Lids in the Treatment of Trachoma with Roentgen Rays.—Hoeniker, E., and Romanin, V., Triest (*Zeitschrift fuer Augenh.,* 1905, xiv, p. 569).

The apparatus is intended to replace the hands of the operator in holding the everted lids and protect them from the injurious influences of the Roentgen rays. The head of the patient rests on an upholstered board from which 2 arms project forward at right angles. Through slits in the ends of these, adjustable lid holders of hard rubber pass at right angles toward the eyes. The face is covered by a mask of lead.

So far the results of the authors with Roentgen rays in the treatment of trachoma were very encouraging. Three cases were cured and presented to the Medical Society of Triest. No disagreeable effects were experienced, and the patients preferred the apparatus to fixation of the lids by the hands. Two illustrations show its application. C. Z.

The Localization of Foreign Bodies in the Eye.—Sweet, William M., Philadelphia, Pa. (*The Ophthalmoscope,* January, 1906). The author's extensive experience with the x-ray in the localization of ocular foreign bodies enables him to claim that it is the most reliable method of localization. He believes that a splinter of metal which is large enough to penetrate the eyeball will be of sufficient density to cast a shadow on the photographic plate. For a method to lay any claim to accuracy it must be based on the triangulation of the planes of the shadow of the foreign body at two exposures with the tube in different positions and studied in relation to the shadows cast by one or more points of known position near the eyeball. He has employed this method for the past eight years. The localization apparatus employed consists of a light metal frame for holding the photographic plate and is provided with a movable arm supporting two ball-pointed rods. These rods are parallel to each other and to the plate, and the center of each ball is at a fixed distance apart. The holder is attached by tapes to the side of the head. The patient lies on a table, an object is placed several feet away so that on fixation of its point the visual axis of the injured eye is parallel with the photographic plate. The ball-pointed rods are then moved until one ball is opposite the center of the cornea, the other taking a position to the temporal side and close to the plate. The distance of the ball from the center of the cornea is measured. The x-ray tube is placed 18 inches toward the uninjured side of the head and slightly anterior. The second exposure is made on another plate with the tube slightly below its former position. The estimation of the presence of the foreign body, its size and situation is now gone into in an elaborate manner by the author by his system of triangulation, which can not well be abstracted. M. B.

THE INTRAPOLAR MAGNET. A NOVEL UTILIZATION OF ELECTROMAGNETISM FOR REMOVING PIECES OF IRON FROM THE EYE.—JURNITSCHEK, F., assistant at the eye clinic of Prof. C. Mellinger, in the University of Basel (*Zeitschr. f. Aug.*, xiv, 1905, p. 426). The magnets of Haab, Schloesser, Magweg, Volkmann, Schenkel, consist of a large iron core encircled by layers of wire. By directing one pole toward the eye containing a foreign body of iron or steel, this becomes sufficiently magnetized if near to the pole. But if the piece of iron is situated in the posterior portions of the eye, the magnetization will not be as intensive, since by the divergence of the lines of force (as may be demonstrated by the arrangement of sift iron filings on a sheet of paper placed on the magnet), only a part of them will act on the foreign body. Another disadvantage of these magnets is that they obscure the field of operation by their bulk.

The new intrapolar magnet, devised by Professor Mellinger and the electrician Klingelfuss, allows of a better utilization of the lines of force. It has the form of a large ring, which consists of a great number of coils of copper wire surrounded by a ring of iron and acts on the principle of a solenoid. If an electric current passes through a solenoid, a homogeneous electric field is generated with its greatest intensity in the point bisecting the axis of the solenoid, and the lines of force are parallel to the axis. A small piece of iron, placed into the axis of the solenoid, therefore, receives a greater magnetic induction than by the other kinds of magnets. A series of iron rods, of varying thickness, which are held in the lumen of the solenoid, serve as armature. The opening of the ring is adapted to the average size of a human head, so that the eye with the foreign body and the iron rods, manipulated by the hand of the operator, are placed into the area of greatest magnetic concentration. None of the rods is so thick as to cover the field of operation.

After instillation of atropin the head of the patient, seated on a revolving chair, is brought into the ring and an attempt is made to bring the foreign body into the anterior chamber, from which it is extracted by means of Hirschberg's hand magnet. In 19 out of 20 cases the foreign body was dislodged. Only one case resisted all efforts of extraction, the piece of iron being firmly imbedded in the ciliary body and sclerotic. The clinical histories are given in detail, and a table shows the measurements and weights of the extracted foreign bodies. C. Z.

THE GIANT MAGNET.—WHARTON, JOHN, Manchester, England (*The Ophthal. Review*, December, 1905). The writer gives a number of observations based on statistics obtained from a tabulation of the cases at the Manchester Royal Eye Hospital from 1903 to the present time. The magnet employed can exert a pull of 30 pounds per square inch with the object at a distance of one inch from the point. In all cases when the piece of metal could not be seen a radiogram was obtained and the foreign body localized by the Mackenzie-Davidson apparatus.

The time intervening between the accident and the operation for the removal was found to be a most important factor, and the best results were obtained in those cases which were operated on within the first 24 hours following the accident. Any foreign body embedded in the eye soon becomes surrounded by a plastic exudate which, though quite soft, appears to hold it firmly and offers great resistance to its removal, even by the use of the strongest currents. Again, when the piece of metal has been in the eye some days or weeks, the amount of attractive force necessary to withdraw it drags so much of the neighboring tissues that the subsequent inflammatory reaction, together with that resulting from the original trauma, reduces the possibility of a satisfactory result and undoubtedly, in some cases, brings on a marked iridocyclitis, with early shrinking of the globe.

The situation of the wound of entry is of considerable interest and importance. In corneal wounds the ultimate result depended on the final position of the metal—when in the lens the results were excellent; when the metal passed through the lens into the vitreous or was embedded in the coats of the eye beyond, the results were disastrous. "In some recent text-books it is taught that by means of the giant magnet pieces of metal can be withdrawn from the vitreous chamber through the pupil into the anterior chamber, whence removal is easy. Our results by this method do not encourage this mode of operation, and it is questionable whether a scleral puncture might lead to better results in some cases, more particularly in those cases in which the metal has been in the eye some time, the eye inflammation quieting down and the entrance wound healed."

In wounds of the ciliary body or further back in the sclera, especially when the wound was through the ciliary body, the results were extremely good and enucleation was never necessary.

Regarding the size and shape of the piece of metal the writers found the spicules easiest to withdraw, and this they thought due to the fact that the poles produced on the metal by the magnet are more apart in the longish, narrow pieces of metal, while in the small rounded bits of metal that positive and negative poles are too clustered.

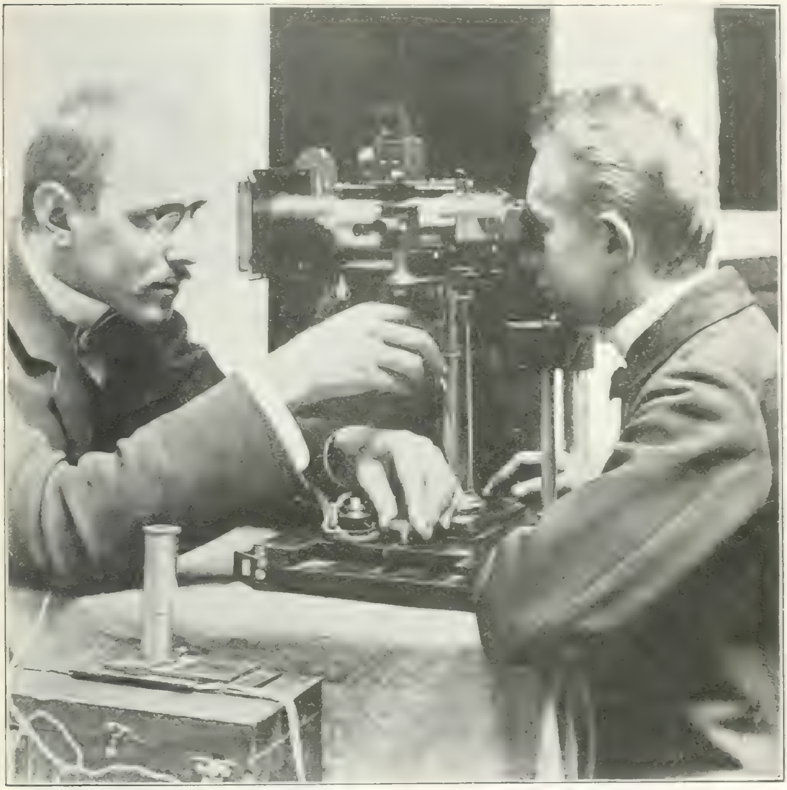
Concerning the septicity of the wound, all chips of metal entering an eye may be considered as free from organisms, the septic inflammations being produced by the subsequent entry of organisms either through the tract of the wound or during the operation for removal. This is the deciding factor in all the operations, and it is here where the giant magnet is so superior to the hand magnet; for with the latter the armature must be introduced into the globe and thus an element of risk arises; in addition the destruction of tissue caused by the probing about in the vitreous offers an excellent pabulum for any organisms which may be introduced at the time; finally, there is a great risk of producing detachment of the retina with the small magnet. By the use of the giant magnet, on the other hand, immediate contact with the eye is unnecessary, there is a minimal amount of tissue disorganization when a graduated pulling force is used, and the risk of infection from actual contact is *nil.*

"The following suggestions might be made in using the giant magnet: 1. In recent cases with an open wound remove the metal through that wound. 2. When the original wound has completely healed endeavor to draw the foreign body into the anterior chamber through the circumlental space, whence it may easily be removed. If this fails, 3, make a large corneal flap, when it will probably be found easy to remove the metal, as in one of the cases above mentioned. In conclusion, it may be stated that, although the giant magnet has added to our means of removing chips of metal from the interior of eyes, yet there is still a place, and a very important place, for the ordinary small electromagnet." C. H. M.

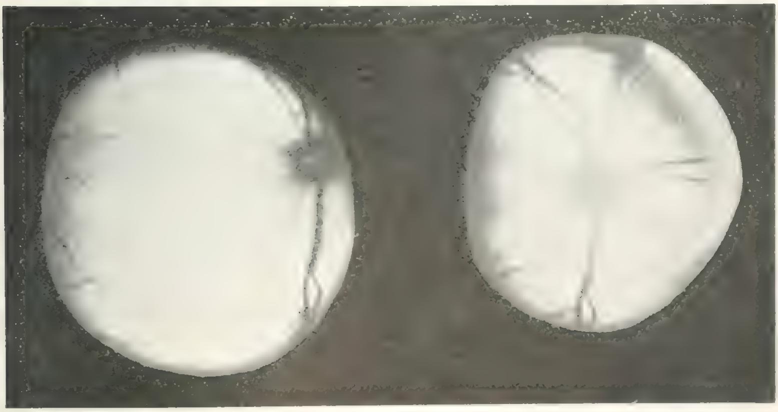
PHOTOGRAPHING THE INTERIOR OF THE EYE.—*The Literary Digest* (Feb. 3, 1906) abstracts an article from *The Sphere* (London) as follows:

"An apparatus, by means of which it has become possible to obtain good photographs of the background of the eye, has been devised by Dr. Walther Thorner, of the University Eye Clinic in Berlin.

"This result, though long desired by oculists, has hitherto been found impossible. Dr. Thorner has, however, accomplished this important step in the treatment of eye diseases. His contrivance constitutes a material improvement of the ophthalmoscope invented by Helmholtz in 1850, which latter devise only admits of looking at the background of the eye. Owing to its peculiar construction, it has been impossible heretofore to photograph the interior or back of the eye. It is a matter of great difficulty to illuminate the interior sufficiently to take a serviceable picture, and even if strong sources of light were used the exposure would last too long, render-



Ophthalmoscopic photography.



Reproduction of actual photograph of the fundus. (The irregular ovals should have been reproduced in the customary circular backgrounds).

ing necessary a fixation of the eye, which, in turn, would entail serious inconvenience to the patient.

"Dr. Thorner first succeeded in obtaining photographs of the eyes of cats, but the interior of the human eye being much darker it required many improvements before good photographs of the interior of human eyes could be taken. The changes proved perfectly satisfactory. With a soft light the eye is first so focused that its back yields a clear image on the photographic plate. The plate put in, the camera itself is opened by pressure on a special lever, and a flashlight composition is ignited by means of an electric spark generated in a storage battery. Thereby the background of the eye is lighted up for a moment sufficiently to produce a good image on the plate.

"It is possible to distinguish healthy eyes readily from sick ones, the eye of a strongly short-sighted person being, for instance, characterized by a peculiar ring around the sun-like illuminated center. Oculists will now be enabled to watch the progress of eye diseases or disorders step by step. The apparatus also permits of taking a picture of any separate part of the interior of the eye." H. V. W.

IRIS.

DIFFICULTIES OF THE DIAGNOSIS OF THE SYPHILITIC NATURE OF IRITIS.—AUBINEAU, Brest (*Annales d'Oculistique*, August, 1905). Although syphilitic iritis frequently assumes an insidious form, its progress is sometimes acute and the pain may be severe. The objective symptoms are much more important. The parenchymatous form of specific iritis permits of the formation of special productions to which various designations have been given. In his recent work Terrien includes in the form of papulous iritis the little hemispherical granulations, which he calls condylomata, and reserves the name of gummata for peculiar and more rare productions. Specific iritis is nearly always a secondary manifestation and often a very early one occurring at a time when the other syphilitic manifestations bear all the marks of simple hyperplasia. The papules which may be met with at the same time with the condylomata are only the initial stage of these little rounded productions commonly, though not correctly, considered as gummata. If, in an iritis, circumscribed hemorrhagic plaques are observed, syphilis may be positively determined to be the cause. This is not the case with condylomata which, though they establish a strong probability of syphilis, are not pathognomonic. The diagnosis between syphilis and tubercle may present grave difficulties, as the two diseases may occur together.

Traumatism may be the exciting cause of syphilitic iritis and it is possible that a corneal wound may be the point of entrance for an exogenous infection, or a syphilitic iritis may be superimposed on an iritis from other cause. G. C. H.

LACRIMAL APPARATUS.

On Movable Orbital Lacrimal Glands. Scrini (*Archives d'Ophtalmologie,* October, 1905). A number of cases of traumatic dislocation of the lacrimal gland have been reported, but spontaneous prolapse is comparatively rare. There is a rather hard tumor of oval form at the outer angle of the orbit contained in a fold of skin in which it rests as in a sac or hammock, and may hang down over the commissure of the lids. It is freely movable between the skin and the tarsus in the horizontal and upward directions, but not downward, and, unless too large, can be replaced in its proper position in the orbit, but falls out at once spontaneously by its weight or as a result of lowering of the head or straining.

Galovine found, in a gland that he extirpated, the results of chronic interstitial inflammation and degeneration of epithelium. In the cases reported the ages of the patients varied from 18 to 63 years, and the condition was more frequently unilateral than bilateral.

Coughing, epilepsy and moral emotions, noted in some cases, have been suggested as etiologic factors; sudden hyperemia of the gland consecutive to vasodilatation causes its displacement and subsequent prolapse. Congenital dislocation of the lacrimal gland is known to occur in connection with defects in the conformation of the orbit.

The orbital portion of the gland is not in immediate apposition with the periosteum, but is separated from it by a layer of adipose tissue, which makes it more easily displaced. Anomalies of fixation can also facilitate displacement. Normally the orbital portion is held in place by a prolongment of the aponeurosis of the levator and superior and external straight muscles, which, passing above the gland, are inserted in the external wall of the orbit. Rather dense fibrous bands also pass from the capsule of the gland to be inserted in the lacrimal fossa; while the superior, inferior and internal ligaments, which are simple thickened connective elastic bundles, surround the gland. The latter are very loose and easily separated from their attachments.

To explain the mechanism of the luxation we must admit the intervention of two factors—increase in the volume and weight of the gland and, second, relaxation of its system of suspensory ligaments. The first factor is realized when the organ is the seat of chronic infective inflammation, in consequence of which and of the increase in volume the ligaments are stretched, distended and altered in their histologic structure.

Spontaneous reduction of the dislocated lacrimal gland has been observed, extirpation has been practiced, attempt has been made to keep it in its place by an apparatus, and Galovine has undertaken to fit it by means of sutures. G. C. H.

A Case of Suppurative Inflammation of the Lacrimal Gland Following Erysipelas of the Face.—Moretti, E. (*Annali di Ottalmologia,* Fasc. 1-6, 1905), presents a study of the anatomy of the lacrimal gland and the history and literature of dacrioadenitis, with a detailed report of a case. His patient had been affected with suppuration of the lacrimal gland of one side coming on suddenly after an attack of facial erysipelas. An exploratory puncture revealed pus, in which streptococci were found. The abscess was evacuated under chloroform and the cavity packed with iodoform gauze. The lesion rapidly healed and with it subsided the orbital cellulitis, as well as all the symptoms due to pressure on the eyeball by the abscess. These latter were chiefly exophthalmus, deviation of the eyeball and diplopia. The etiology, symptomatology and pathogenesis of dacrioadenitis are minutely discussed, with especial reference to the case presented. He attributes the exophthalmus to infection of the retrobulbar connective tissue.

C. A. W.

A Case of Dacriocystitis After Operation for Empyema of the Antrum.—Jochs, Biarritz (*Die Ophth. Klinik,* No. 21, 1905), observed this sequel in a 52-year-old woman who had suffered from empyema of the antrum for six years previous to the operation. Four days later a sero-purulent catarrh of the tear sac without other inflammatory symptoms made its appearance. The duct was found to be impervious, as injected salt solution returned contaminated by way of the upper punctum. After probing, the duct became patulous. About one month later there occurred a very painful swelling in the region of the tear sac, which quickly subsided, leaving the duct again free. Jochs gives two possible explanations of this result: 1. Extension of the sinus infection by way of the nose. 2. Closure of the mouth of the tear canal with consecutive inflammation of the canal through retention of secretions. As the method of operating upon the empyema had been that of Caldwell-Luc which leads, in a majority of cases, to injury of the canal in its lower part, the author attributes obstruction as the cause rather than ascending infection, the condition being similar to that in dacriocystitis of the new born or that following fracture of the nose.

W. Z.

LENS.

SPONTANEOUS DISLOCATION OF THE LENS AS HEREDITARY DISEASE.—VOGT, ALFRED, first assistant at the eye clinic of Professor Mellinger in the University of Basel (*Zeitschr. f. Aug.*, 1905, xiv, p. 153), reports 15 cases of hereditary spontaneous dislocation of the lens, occurring at the ages of 20 to 65 years in different generations of the same family for almost a century. The dislocation was spontaneous, as in none of the numerous family members any symptoms of congenital ectopia or previous inflammatory or degenerative affections had been noticed. In some cataract developed, which, however, was secondary. Myopia, according to literature, prevalent in most cases of spontaneous dislocation, was not always present. Hence, it seems that the affection may be independent of anomalies of refraction. Out of 30 male descendants 15 showed the affection, of the female, 26, only 3. The clinical histories show that the uncomplicated spontaneous dislocation is a disease for itself, differing from the displacement secondary to congenital ectopia.

C. Z.

LIDS.

TRICHIASIS, ENTROPION AND TINEA TARSI.—SMITH, HENRY, Jullundur (*The Indian Medical Gazette,* November, 1905). The treatment of trichiasis and entropion are much the same apart from spastic entropion. The only operation for entropion he now does is as follows: "I catch the upper lid close to the border with a Bryant's artery forceps and turn it out. I then insert a Graefe's knife just outside the lacrimal punctum in the intermarginal space, taking care to be rather behind it than to run any risk of cutting the hair bulbs across—no evil result follows cutting across the ends of the meibomian gland ducts—and stick the cartilage clean through from that point to the external commissure. I then turn the edge of the knife forward at each end and cut the strip of cartilage across, leaving it attached only to the skin and muscle. I then take off the forceps and insert between the lid and eyeball a horn spatula and excise an ellipsoidal piece of skin from the lid—the lower incision parallel with the border of the lid and about one-eighth of an inch from its margin. From the space thus exposed in the middle I take out a liberal piece of the orbicularis muscle down to the cartilage, so as to reduce its power, and unite the edges of the skin with a few stitches. When I have gone this far I observe that the ends of the cilia-bearing stripe stand out as a pair of unsightly points. These points I trim with a sharp pair of scissors. At this stage anyone can see I have caused the cilia-bearing border to slide up as a whole from end to end on the sliced border of the base of the cartilage. I do not insert a piece of skin or mucous membrane graft in the gap; that seems to be no gap, as the one is slid on top of the other. The after-result is about as perfect as any operation is perfect. The cilia-bearing border I have never seen necrosing." In the case of only a few ingrowing hairs he, in the same manner, detaches the piece of cartilage bearing the hairs at fault and stitches in with a steeple stitch a piece of mucous membrane from the lid, running the two tails of the stitch, on separate needles, up through the incision and out through skin about one-third of an inch above the border and tie them there over a small roll of gauze. This graft always grows if the weeping of blood from the wound has completely ceased before it is inserted.

In the treatment of tinea tarsi he first clears off the scabs and as soon as weeping from the raw surface has ceased, rubs the margins heavily with a solid nitrate of silver stick. In a few days, after the slough and lashes have dropped off, the application of the silver stick is repeated. F. A & P. G.

MATERIA MEDICA AND THERAPEUTICS.

A Note Upon Alypin, a New Anesthetic.—Stevenson, Sidney, London, Eng. (*The Ophthalmoscope,* November, 1905). Alypin is a white crystalline neutral powder, which is extremely soluble in water. It is a synthetic compound and is a derivative of glycerin. It has been introduced by the Bayer Company. Its toxic action is one-half that of cocain. It can be boiled without injury. It does not dilate the pupil nor affect the accommodation, nor cause widening of the palpebral aperture. Neither does it injure the corneal epithelium nor contract the blood vessels. Its action upon the eye in 2 per cent. solution is equal to that of cocain as a local anesthetic. Full anesthesia is present in less than two minutes and its action remains as long as cocain. He has used it for all kinds of ocular operations and finds it as efficient an anesthetic as cocain. It does not smart as much as cocain when dropped in the eye. Its present cost is about that of cocain, but it should be less expensive. M. B.

ALYPIN, A NEW LOCAL ANESTHETIC.—JOSEPH, M., and KRAUS, JOSEPH, Berlin (*Deutsche Med. Woch.*, 1905, M. 49, p. 1966), give the following summary of their experience with alypin: 1, Alypin is a good local anesthetic for urologic practice; 2, alypin is as effectual as cocain and eucain and surpasses them with regard to its relative non-toxicity; 3, alypin seems to be free from injurious accessory actions; 4, it is cheaper than cocain. C. Z.

THE VALUE OF ALYPIN IN OPHTHALMOLOGY.—MÖLLNER, H., (from the eye clinic of Prof. J. von Michel, Berlin, *Berliner Klin. Woch.*, 1905, No. 43, p. 1361). Alypin, in 5 per cent. solution, apparently acts directly on the minute nerves of the cornea, does not dry the epithelium of the cornea, but if six or more drops are used, the patient notices a white fog, due to fine, grey homogeneous dots, only visible with magnifying lens in the deepest layers of the epithelium or Bowman's membrane, probably from transient damage to the protoplasm of the cells. Six to eight drops (not one or two) produce marked, not intense, mydriasis from three-quarters to one hour, i. e., (direct) paralysis of the sphincter iridis. Accommodation and intraocular pressure are not altered. Anesthesia sets in quicker and is more intense after alypin than after 5 per cent. cocain, but it lacks the vasoconstrictor action of the latter. The author concludes that alypin can not fully replace cocain in ophthalmology, but deserves a place next to it. C. Z.

ALYPIN.—SICHERER, München, (*Die Ophth. Klinik,* No. 16, 1905), from the results of the use of this drug, which is a monochlorhydrate of benzoyl, in a variety of cases in 2 per cent. solution, concludes that it will prove a strong competitor of cocain because of its anesthetic properties and the following advantages: 1, It is much less poisonous, an advantage that it has in even a more marked degree over holocain; 2, it has no mydriatic or cycloplegic action; 3, it leaves the corneal epithelium intact; 4, its cost is much less.

W. Z.

ALYPIN.—OHM, Berlin (*Woch. f. Therap. u. Hyg. des Aug.*, No. 6, 1905), states alypin has been used for the past six months in Froelich's clinic in the following operations: Removal of foreign bodies from the cornea and conjunctiva; squint operations; iridectomy and lens extraction; removal of chalazia; Hess ptosis operation and in splitting the canaliculus. For instillation a 3 per cent. solution; for subconjunctival and subcutaneous use, a few drops of a 20 per cent. solution was found most satisfactory. For slitting the canaliculus a crystal of the drug was introduced into the canaliculus. His conclusions are that "with about the same anesthetic qualities as cocain no disturbing effects were noted upon the pupil or accommodation, and in higher dosage than cocain for subcutaneous injection no unpleasant sequelæ were noted." W. Z.

Alypin.—Landolt, H., Strassburg (*Woch. f. Therap. u. Hyg. des Aug.*, No. 16, 1906), concludes as the result of the use of the drug at the Universitäts Augenklinik, Strassburg, that: Alypin is an anesthetic, which in about the same strengths of solution is a little weaker and somewhat slower than cocain, while the latter has the advantage of producing anemia, whereas alypin causes hyperemia. Both drugs, in certain patients, have a disturbing influence upon the cornea. The advantages of alypin are that the accommodation and the pupillary width are affected only in a non-disturbing degree, and further that in glaucomatous eyes the T. does not seem to be increased. W. Z.

The Action of Alypin.—Hummelshein, Bonn (*Arch. f. Augenheilk*, liii, H. 1), found that, compared with cocain as to anesthesia, there was no appreciable difference. Alypin causes in most cases a transient hyperemia; in some a more persistent superficial hyperemia and in others no hyperemia. It causes some burning. In 2 per cent. there was no effect on the pupil; in 10 per cent, repeated instillations produce a slight dilatation which may last for hours. No effect on accommodation was noted with 2 per cent.; slight with 10 per cent. T. was usually slightly reduced. It may be repeatedly sterilized without diminishing its therapeutic effect. No effect on the epithelium was noted. The author sums up that alypin is indicated in cocain idiosyncrasy; as a hypnotic in glaucoma and where dilatation of the pupil or weakening of the accommodative power would be dangerous. The hyperemia may be overcome with adrenalin. W. Z.

Protargol.—Steinkühler, Zittau (*Woch. f. Therap. u. Hyg. des Aug.*, No. 5, 1905), commenting upon Randolph's caution in reference to the use of protargol (*Ophth. Record*, June, 1905), states that he believes that the trouble arose from the use of a spoiled solution. According to Steinkühler, protargol solution must be made with cold water and always be prepared freshly. Druggists in their haste may use warm water to hasten solution or may use a stock solution. W. Z.

Mydriatics.—Stephenson, Sydney (*Medizinische Blätter*, Jan. 8, 1906). The author distinguishes two kinds of mydriatics: 1. Mydriatics, producing mydriasis only; 2. cycloplegics, producing paralysis of the ciliary muscle, and through this disturbances of accommodation. The latter are at the same time mydriatics.

The mydriatics include cocain, euphthalmin and mydrin. The best known cycloplegics are atropin, homatropin, eumydrin and atropin methylbromid. The action of atropin is of longest duration. Eumydrin acts in 1 per cent. solution very promptly and is fifty times less poisonous than atropin. It differs from atropin in the fact that the lack of accommodation lasts only two to three days, whereas with atropin it lasts eight days, and that the mydriatic, as well as the cycloplegic action of eumydrin can be neutralized by an instillation of a 0.5 per cent. solution of physostigmin in about one-half hour, whereas in a mydriasis produced by atropin, physostigmin produces no reaction whatever. In cases of atropin idiosyncrasy eumydrin can be used as a substitute with very good results. J. G.

Comparative Investigations on the Actions of Atropin, Homatropin and Eumydrin on the Eye.—Grube, F., Goettingen (*Inaugural-Dissertation,* 1904). From his experiments on rabbits and man, which are given in detail, Grube concludes: Mydriasis by one-half mm. set in most rapidly after 1 per cent. homatropin, viz., in six minutes, after 1 per cent. atropin and 5 per cent. eumydrin in ten, after 1 per cent. eumydrin in twelve and one-third. Mydriasis reached its maximum fastest after 5 per cent. eumydrin in twenty-eight minutes, after atropin in twenty-eight and one-half, after homatropin in thirty-one, after 1 per cent. eumydrin in fifty-one minutes. It lasted longest after atropin, twenty-six hours, after 5 per cent. eumydrin sixteen to twenty hours, 1 per cent. eumydrin seventeen and one-half hours, homatropin three to five hours. The action of atropin ceased after five to seven days, 5 per cent. eumydrin after seventy-eight hours, 1 per cent. eumydrin after sixty hours, homatropin after twenty-six hours.

Accommodation was completely paralyzed in all cases of atropin and 5 per cent. eumydrin, only in a portion of the cases of 1 per cent. eumydrin and homatropin; in the remainder it was only partial. Accommodation generally was completely restored simultaneously with subsidence of mydriasis after these drugs, with the exception of atropin. after which paralysis of accommodation was of shorter duration than the height of mydriasis.

Homatropin deserves preference for diagnostic dilatation of the pupil, atropin for refracting, eumydrin for therapeutic purposes. Five per cent. eumydrin is equivalent to 1 per cent. atropin, but superior in cases of plastic iritis, which requires prolonged application of a mydriatic, on account of its being less toxic and less irritating. C. Z.

THE MISUSE OF ATROPIN IN EYE DISEASES.—DEANE, LOUIS C., San Francisco (*California State Jour. of Med.*, October, 1905). The author calls attention to the bad results that may follow the use of atropin and advocates the use of milder and more transient mydriatics.

In eye diseases, where it is advisable to use a mydriatic, he advises "the weakest mydriatic that will obtain and maintain a moderate dilatation." He favors the use of scopolamin in 1/10 per cent. to 1/20 per cent. solution, reserving the use of atropin for those cases where milder mydriatics are not effective.

For ophthalmoscopic examination he uses euphthalmin.

W. R. M.

SOLUBLE SULPHATE OF QUININ IN OPHTHALMIC PRACTICE.—GIBSON, J. LOCKHART, Brisbane (*The Australasion Medical Gazette,* August, 1905). Fourteen years' experience of the use of bisulphate of quinin has led to a very favorable impression of its value, especially in two very serious eye affections—purulent conjunctivitis and hypopion keratitis. For the past ten years, at the Brisbane Hospital for Sick Children, all cases of purulent conjunctivitis, whether caused by gonococci or other cocci, have been treated with the following solution: Bisulphate of quinin, 3 grains; boracic acid, 12 grains; water, 1 ounce. The quinin is the essential part of the lotion. The patient is to be laid on the back with no pillow, the lids to be separated and the lotion poured freely in every three hours, night and day. No nitrate of silver has been used in these cases. In no case has ulceration of the cornea occurred when the eye came under treatment with a clear cornea, and in cases where ulceration has already occurred he believes that quinin is more likely to lead to healing than any other treatment.

In 1903 an epidemic of infective conjunctivitis, with purulent discharge, occurred at the Queensland Asylums for the Insane at Goodna and Ipswich, where some 721 patients were affected. The first 200 cases were treated with nitrate of silver solution, and in 20 of them ulceration of the cornea occurred. In 4 of these 20 considerable opacity of the cornea resulted, with much impaired sight. After commencing the use of the solution of quinin as a routine treatment, the epidemic lasted five weeks, and 520 cases occurred. There was not a single case of ulceration of the cornea, and recovery was much more rapid than under the former treatment.

In the more usual forms of catarrhal conjunctivitis with mucopurulent secretion, sulphate of zinc is found more helpful. Where pus is present, however, the quinin solution is almost a specific, especially with regard to safeguarding the cornea.

In cases of hypopion keratitis the use of bisulphate of quinin has in many cases disinfected the ulcer and caused the hypopion to clear up in a remarkable manner. Occasionally, the three-hourly use of the solution, combined with atropin or duboisin, has caused within twenty-four hours the disappearance of a hypopion, followed by a more gradual healing of the ulcer. F. A. and P. G.

Argyrol in Ophthalmic Practice.—Hinshelwood, James, M.A., M.D., Glasgow (*Ophthalmoscope,* January, 1906). The author has used argyrol very extensively for several years, and gives his personal experience with this drug. He finds it to be the most powerful antiseptic which can be used in the eye, and that it is indicated everywhere an antiseptic is to be used. It is absolutely unirritating, except solutions which have been exposed to light. He does not find that its value is lessened by this exposure, only that it produces irritation. Old solutions, if they have not been exposed to light, are unirritating, and as powerful as ever in their action. In septic and infected conditions of the eye, solutions of from 20 per cent. to 30 per cent. should be used every one to four hours. He has found a salve containing argyrol, holocain and atropin of great value in corneal ulceration. Thirty per cent. solutions applied to the margins of the lids and eyelashes with a brush and well rubbed in are of the greatest value in blepharitis. A camel-hair brush can be prepared by cutting it down until it is stubby. He cautions against being careless while injecting solutions of argyrol into the lacrimal passages, since if the solution finds its way, through rupture of the mucous membrane, into the subcutaneous tissues, a permanent grayish discoloration of the skin will remain. He finds that it will stain the conjunctiva if used for an indefinite period, but that it is less liable to do this than any other silver salt.

M. B.

The Substitution of the Organic Silver Preparations for Silver Nitrate in the Treatment of Diseases of the Eye.—Gross, J. H., St. Louis (*Journ. Mo. State Med. Assn.,* November, 1905). The use of nitrate of silver in ocular therapeutics was revived by von Graefe, who considered as indications for its use, as we still do, a hyperemia of the conjunctiva accompanied by a certain succulence. Anemia and dryness are counter-indications. After applying a fairly strong solution of silver nitrate, a thin white scum forms of superficial epithelial cells killed by the coagulation of their albumen. This membrane is soon freed by the transudation beneath it and washed out by tears. In this way the microorganisms in the superficial layers of the conjunctiva are cast off. If the caustic is used late at night, these cast-off cells may be pent up by the lids during sleep and cause irritation and pain. This caustic action, which in many inflammations is of decided benefit, is not possessed by the organic silver compounds. When the classical conditions which call for nitrate of silver are present, it is doubtful if as much can be accomplished by any other agent. Many physicians do not like to use nitrate of silver on account of the pain caused by strong solutions. Too great concentration is generally employed. Occasionally, we find patients who are intolerant of this caustic. As a rule, a 1 per cent. solution is quite strong enough, even in severe cases requiring heroic treatment. It should not be applied to the cornea unless the latter is diseased, and the conjunctival sac should always be flushed out afterward. In blennorrhea of the newborn, an affection in which the organic preparations of silver have gained their greatest reputation, Gross would not feel safe and satisfied, if after the first stage, that of infiltration, the treatment consisted only of the use of one of the new silver preparations to the exclusion of the silver nitrate. The author vigorously opposes Weeks' dictum that the danger to vision from gonorrheal infection is slight when vigorous treatment with strong solutions of argyrol is instituted, and doubts if this infection is feared any the less since argyrol and the other soluble salts of silver have come into use. P. H. F.

THE PHYSIOLOGIC ACTION OF DIONIN.—SNYDER, W. H., Toledo (*Journ. Am. Med. Assn.,* Nov. 18, 1905), has examined, microscopically, the eyes of rabbits on which pure dionin powder had been used. The drug, ethyl-morphin hydrochlorate, is a white, odorless, bitter powder, soluble in water 7 parts, alcohol 1.5 parts, syrup 20 parts; insoluble in ether and chloroform. The aqueous solution is neutral and keeps a long time. The general physiologic action is like that of morphin, but it is less toxic and does not produce nausea, constipation or habit. Applied to the eye, either as a solution or powder, it produces marked sneezing, congestion, edema, "glandular excitation," burning and lacrimation and supposedly lymphatic extravasation, followed by analgesia, lasting from two to twenty-four hours. Sections of eyes showed dilatation and edema of the lamellar spaces in the substantia propria of the cornea, most marked at the limbus. Snyder concludes that the action of dionin is purely local—greatest where the drug has actually rested. Its most marked action is in eyeballs with plus tension, "disassociating" the intercellular cement-substance and allowing a transudation of serum. Analgesia is explained by reduction of tension, plus the specific morphin action. There is no increased flow of lymph, the fluid being serum and devoid of lymph cells. Cases of complete absorption of the lens and capsule have been reported, due to or at least during the use of dionin, and Snyder reports a similar occurrence after severe contusion of the globe in a patient of his own. In iritis with plus tension and adhesions the use of dionin lessens the tension and allows the mydriatic to be absorbed more promptly. Relief of pain and dilatation of the pupil result. In corneal ulcers, especially the peripheral type, the repair process begins as soon as the ulcer is cleared. The more recent the inflammation and the higher the tension the better the results obtained. Koenigstein claims that dionin is almost abortive of parenchymatous keratitis, but only if used in the earliest stages of the disease. Graefe, on the other hand, only gets good results in vitreous opacities when they are of long standing. Central opacities of the cornea of long standing and with normal or minus tension are but slightly, if at all, benefited. Von Arlt has had good results in these cases after as much as 21 months of treatment. Wolffberg uses the drug in hemorrhagic glaucoma. Blanco injects a 5 per cent. solution in intraocular hemorrhage, with surprisingly good results. In pannus the cornea clears up and resists opacification better than with any other treatment. In glaucoma Snyder prefers dionin to eserin, relief from pain being very marked, and has abandoned the use of solutions, applying the drug in "small specks" of the powder on two or three places on the cornea. P. H. F.

SILVER FLUORID IN THE TREATMENT OF OCULAR AFFECTIONS.—RE, F. (*Archivio di Ottalmologia,* xii, Fasc. 1-2, 1905), asserts that the indications for silver fluorid are the same as for silver nitrate. The former remedy has the advantage of being better tolerated, is less irritating and is more effectual in equal dosage. The author also claims that it has superior antiseptic properties. For example, a 1:5000 solution of the fluorid has an antiseptic action which is lacking in the nitrate of the same strength. The fluorid is also less caustic than mercuric bichlorid, but it has more penetrating power and is preferable to equal strengths of sublimate. Re advises its use in all forms of conjunctival infection, especially in trachoma, for which he uses it not only as a collyrium (1:1000), but applies it himself to the lids in 1 per cent. solutions aided by scarification.

He believes the fluorid to be the best agent for the treatment of purulent or mucopurulent conjunctivitis and regards it as very effectual in affections of the lacrimal apparatus. It should not be used to sterilize instruments, as it injures them. C. A. W.

SCOPOLAMIN-MORPHIN ANESTHESIA IN OPHTHALMIC SURGERY.—SUKER, G. F., Chicago (*Medicine,* January, 1906), finds that the method introduced by Schneiderlin has the advantage of rather unusual muscular relaxation, while the patient is still sufficiently conscious to obey the orders of the surgeon, in itself a valuable feature. It is desirable in operations wherein cocain does not produce the required anesthesia, and where narcosis is contraindicated by systemic disease, or because the surgeon loses control of the voluntary eye movements of the patient. There is practically no stage of excitement even if ether or chloroform is employed. Small amounts of these narcotics will maintain prolonged anesthesia, but great diligence must be exercised in their administration. General anesthetics can often be dispensed with. The after-effects are almost *nil* and but slight danger of urinary or cardiac complications. The patients rally, not by shock or emotion, but have a peaceful awakening. Up to the present date perhaps 3,000 anesthesias have been given with but 6 (? P. H. F.) recorded deaths, and these are directly attributable to its effects. In another passage the author states that "the deaths reported (Flatau, Israel, Dork) can not be directly ascribed to the scopolamin or morphin, as in all of them rather large quantities of chloroform were simultaneously administered. The dosage, according to Blos, Korff, is as follows:

Scopolamin hydrobromat	gr. 1/50
Morphin sulph	gr. ½

carefully dissolved in 3 drams of distilled water. The patient having been prepared as for any other anesthetic, one Pravaz syringeful (quantity ? P. H. F.) of this mixture is injected into the arm two and a half hours before operation; a second, one and a half hours before, and a third one-half hour before operation. Shortly after the first injection the patient becomes sleepy and drowsy. By the time the third injection is given he is scarcely sensitive to pain, while rather actively sensitive to touch. Half an hour after the third injection, usually, complete anesthesia obtains. Should this not be the case, a minute quantity of chloroform or ether, administered in a very restricted manner, is requisite. (Of late the reports of fatal poisoning by scopolamin-morphin anesthesia have become frequent. The dose of scopolamin given in the paper is dangerously large, as death has been known to follow gr. 1/150. The dose of morphin, too, is not safe. A concensus seems gradually to have been reached that this method is too dangerous for general use. —P. H. F.) P. H. F.

Doyen's Antistaphylococcus Serum in Dacryocystitis.—Darier (*Die Ophth. Kl.*, 1905, No. 24), has employed this treatment in three cases with two successful results. In the first case, treatment with sounds having failed, 5 c.cm. of the serum were injected. On the following day Darier, wishing to make a microscopic examination of the secretion, made pressure over the sac and found it empty. Six injections were given in all. In the second case, all treatment having failed, the serum was employed, and, while there was improvement, there was no cure. Microscopic examination showing large numbers of gonococci (?) in the secretion, the sac was extirpated. In the third case, in which there were large numbers of staphylococci present, intragluteal injections were followed by intense pain, redness of the skin and lameness. After several injections cure resulted. W. Z.

Contributions to Serum Therapy of Ulcus Corneæ Serpens.—Paul, L. (From the eye clinic of Prof. W. Uhthoff, Breslau. *Klin. Mon. f. Aug.*, 1905, ii, p. 353). Supplementing his report on 11 cases in vol. xliii by 4 more successful ones, Paul had, out of all 15, 6 cures, 2 partial cures and 7 failures, i. e., 55 per cent. probability of a cure. This time he selected only cases which, after 1 or 2 days of antiseptic treatment, were still progressive. In one the process was arrested after using great quantities of pneumococcus serum, but recurred after discontinuing the serum for a few days, until it finally healed under reinforced serum treatment.

Paul, however, emphasizes great precaution in judging the results of serum therapy, as he saw that in a number of cases the healing tendency of serpent ulcer was quite marked, and in others ulcers of medium intensity, which by cauterization undoubtedly would have rapidly subsided. C. Z.

Tuberculosis of the Eye Cured with Marmorek's Serum.—Schwartz (*Wiener Klinisch-therapeutische Wochenschrift*, Jan. 7, 1906). A boy, 16 years old, developed tubercular conjunctivitis after a trauma. The nature of the infection was proven directly by the presence of tubercle bacilli and by inoculation; after 37 injections of Marmorek's antitubercular serum, 289 c.c. in all, a complete cure resulted; the accompanying swelling of the glands had disappeared entirely with the exception of two small glands at the angle of the jaw.

The injections produced no rise in the temperature, a passing urticaria only being noticed.

The infection was quite virulent; four weeks after infection took place fluctuation of the gland behind the ear lobule could be detected. After the injection of 54 c.c. of serum no change in the number of bacilli could be detected; their number did not begin to diminish until 183 c.c. of serum had been injected.

Tuberculosis of the conjunctiva is a very rare affection. Up to the present time the treatment of the condition was purely surgical.

J. G.

On the Action of Radium on the Trachomatous Conjunctiva.—Thielemann, R., assistant at the eye clinic of Prof. H. Kuhnt in the University of Koenigsberg (*Zeitschr. fuer Aug.*, xiv, 1905, p. 559), reports 6 cases. For comparison only one eye of patients with distinct solid trachoma granules of both eyes was treated in the following manner: The eyeball was protected by a prothesis of glass (containing a very high percentage of lead), and the everted eyelids were daily exposed to 2 mg. bromid of radium, enclosed in a glass tube, at first for 5, then for 7 and 10 minutes. The lids of the other eye were simultaneously everted, so that their granula were subjected to the same conditions of pressure, air and light.

The granules exposed to radium commenced to disappear on the lower lids after 7 to 8 days, while they were not completely removed from the plica semilunaris as late as the 46th day. The epithelium remained intact and there never was a discharge of gelatinous granulous substance.

The microscope also showed great differences in pieces of conjunctiva excised from the lids treated and those not treated. In the former there was no sign of a typical granule. Only the covering membrane was left, almost without cells; it looked like an emptied nest. The blood vessels appeared to be more numerous and of a larger lumen. Near the dissolved or shrinking granula they seemed to be filled with polynuclear leucocytes. The author, refraining from premature optimism, emphasizes that his object was to prove the undeniable influence of radium on granulosis and expects to report later whether a definite cure or only a transient effect is obtainable.

C. Z.

Clinical and Anatomic Investigations on the Action of Radium on the Trachomatous Conjunctiva.—Birch-Hirschfeld, privatdocent (From the eye clinic of Prof. H. Sattler in the University of Leipzig. *Klin. Mon. f. Aug.*, 1905, ii, p. 497), observed in ten cases of doubtless trachoma after the action of radium (10 mg. of the bromid for 3 to 20 minutes) marked flattening and disappearance of the follicles. Only in one case this effect lasted several weeks. In the other 9 new follicles developed after days and weeks even on the places which had been directly exposed to radium. Thus the treatment with radium showed no advantages over other methods (roller forceps, massage, silver salts, cuprocitrol salve). On the contrary, the conjunctiva, after the use of radium for months, had to be treated otherwise. The trachoma follicle after exposure to radium presents the same anatomic changes as found by Heineke in normal lymph follicles. It reacts very readily, but transiently, to radium. Only those cases can be considered cured in which after observation of several months and after longer discontinuance of radium no new formation of follicles takes place. Birch-Hirschfeld warns against employing too strong preparations or too long and too frequent sittings in the direct neighborhood of the unprotected eye. C. Z.

CONCERNING THE TREATMENT OF CANCROIDS BY RADIOTHERAPY.—VALUDE, Paris (*Annales d'Oculistique*, August, 1905). Valude includes in the term cancroid the various forms of epithelioma. He reports four cases treated by radium and concludes that radiotherapy is of absolute efficacy in benign cases—a resource for patients who refuse operative intervention. In difficult cases in which excision is ordinarily followed by return, radiotherapy is not likely to be successful. Besides, the treatment is tedious and not free from irritation, and often the eyelids remain edematous and congested.

He thinks that for epitheliomas accessible to the knife free excision remains the treatment of choice and is more rapid and more sure, and that radiotherapy is the best palliative treatment in inoperable cases. G. C. H.

THE EMPLOYMENT OF THE ROENTGEN RAYS IN CERTAIN EYE AFFECTIONS.—PARDO, R. (*Archivio di Ottalmologia*, xii, Fasc. 7-8, 1905), has been using the Roentgen rays extensively in his ophthalmic practice and has found that they cure trachoma without leaving scars. The results were uncertain in follicular conjunctivitis and spring catarrh, but the rays had a favorable action on episcleritis and scleritis. He had some painful experiences on his own person before he learned to manage the tubes so as to protect himself and the patient against *x*-ray injury. He used a Crookes tube, with a 65 cm. spark and a mercury interrupter, giving from 35 to 45 exposures at a distance of 30 to 45 cm. The patient's face was protected by a sheet of lead, exposing only the eye. In trachoma the infected follicles, the corneal pannus and all the signs of inflammation vanished without leaving a scar. He now regards as indispensable adjuncts the Benoist radiochromometer (to measure the penetrating power), the Holzknecht chromoradiometer (to measure the amount of rays absorbed) and the Villard osmoregulator, to graduate the penetrating power. C. A. W.

The Mode of Action of Radium in Granular Conjunctivitis.—Darier (*La Clinique Ophtalmologique,* Jan. 10, 1906). Darier states that in 1903 he had encouraging results in trying to cure granular conjunctivitis by the use of radium, but the few cases which he observed in Paris and their relative benignity did not enable him to conclude as to the cure in an absolute manner. Professor Cohn of Breslau has published many cured cases which have been disputed, and Darier states he has not been stayed by the negative published results which do not prove generally that the conditions have been similar to those under which Cohn worked. It is necessary to be in a region rich in granular conjunctivitis and chose a certain number of quite typical cases which have not been previously treated—cases with granulations covering the cul-de-sac and tarsal cartilage. It is essential also to select cases in which the affection has equal intensity in each eye and treat with radium one eye, while the other eye acts as a control. An interesting experiment was made by Dr. Thielman, who chose at the clinic of his master, Professor Kuhnt, six selected cases from 120 granulation patients. Three of the patients chosen were free from any previous treatment, and the other three had not been subjected to medical or surgical interference. In order that the surrounding conditions might be as similar as possible with the two eyes in each case, the eye not treated was exposed to the air and lids everted for the same length of time as those of the fellow eye while the latter was under the radium treatment. The patients chosen were from 7 to 21 years of age. The quantity of radium was 2 mm., contained in a glass tube. The bromid of radium, probably pure, was used; the thickness of the tube is not given. Another experimenter used a thick tube and made short seances; not obtaining success he blamed the radium, while the glass alone was faulty. For this reason Darier prefers the apparatus as recommended by M. Curie. In Thielman's experiments the tube was placed in contact with the everted lids during 5, 7 or 10 minutes each day. In order to avoid all danger, the cornea was covered by a shell of glass in lead. No other treatment. The first result observed after 7 or 8 days of daily application in nearly four similar cases was that the lower lid at the inferior border of the cartilage became smooth, a remarkable subsidence of the granulations, and in one case a complete disappearance without leaving a trace. In the upper lid the changes occurred later, in 10 or 15 days, at which time the granulations appeared smaller and harder. After beginning the treatment the granulations lost their yellowish-red aspect, began to lessen in size, and later, after their disappearance, the former site was indicated by a slight depression. The regressive evolution was always accompanied by a hyperemia, but with no secretion. The granulations at the fundus of the cul-de-sac disappeared more slowly, but by the forty-sixth day had entirely disappeared also. There was no resulting trouble to the conjunctival epithelium and no cicatricial formation. During the whole of the treatment no ill effect was observable except in one case in which there appeared a slight keratitis which lasted only seven days. The hands of the operator were in no way affected. Darier states, in concluding his paper, that he is persuaded we have a most valuable therapeutic power in this new physical agent. B. E. F.

Protection of the Eye in Radiotherapeutic Treatment of Parts Near the Eyeball.—Van Duyse and De Nobele (*Revue Generale d'Ophtalmologie,* Jan. 31, 1905). The authors state that a number of affections of the face very properly treated by the x-rays are often in the vicinity of the eyes; thus rodent ulcer and lupus are known to be so, and that these diseases attack the eyelids. At the present time the radiotherapeutists with caution protect the eye and cover it with layers of lead. Nevertheless the protection is often insufficient. The plaques of lead, thick enough to arrest all the rays, are difficult to shape, and the occlusion of the eye is not made complete; oblique or secondary rays can penetrate beneath the lead and attack the ocular globe. It is necessary to interpose between the lead and the skin a tissue which is a bad conductor of electricity and stop the production of small sparks between skin and lead.

As the field of work in the treatment of localized diseases of the eyelids by radiotherapy is extending, it becomes necessary in order to treat these affections that there should be a means of absolutely shutting off the rays from the anterior segment of the eye. Birch-Hirschfeld has shown in his experiments (*Archiv für Ophtalmologie,* October, 1904) that the x-rays, applied with the intensity and duration necessary for therapeutic service, can cause pronounced modification of the anterior and posterior segment of the eye. These latter are not manifest until two weeks after application. On the anterior segment there has been observed a keratitis resembling the interstitial form, and also iritis and cyclitis. In the posterior segment the ophthalmoscope reveals an atrophied disc. Anatomic examination showed degeneration of the ganglionic cells and of the nerve fibres of the retina. Further, the alterations of the vessels of the skin (Baerman and Linser) have been shown to also occur in the vessels of the conjunctiva. Birch-Hirschfeld concludes from the result of his experimental and clinical work that in the palpebral affections submitted to *x*-rays it is not necessary to make repeated intense applications, given *coup sur coup;* for they would conduce production of corneal lesions; but he recommends short applications of the rays to determine the mode of action and the distance of the tube (8 to 10 units, Holzknecht, each seance) and an interval of two weeks between each exposition. Moreover, Birch-Hirschfeld also insists it is necessary to protect the ocular globe by interposing metallic plates between the lids and the eye, such, for example, as the forceps of Desmarres, Knapp or Snellen. They allow radiation to the everted conjunctiva without damage.

Van Duyse and de Nobele believe that the metallic edge of these forceps, however, mask a part of the conjunctival field, and it seems better to them to protect the bulb by a shell which is impermeable to the rays and which is molded to the eye anesthetized by holocain. And they recommend a shell of the same material as that from which artificial eyes are made, but sufficiently opaque. The coques of Gundelach of porcelain, with a base of lead, give the best results.

B. E. F.

MISCELLANEOUS.

Relation Between Diseases of the Auditory Apparatus and Those of the Eye.—Blanco, T., Valencia (*Archivos de Oftalmologia,* November, 1905). Blanco refers to many reported cases of ocular involvement dependent on diseases of the ear and mentions the various explanations of the pathogenesis as given by different authorities. According to the author, these various ocular phenomena are dependent on the intimate connection existing between the trigeminus, facial and the nerves controling the ocular muscles; in this manner are explained the occasional appearance of reflex affections of both the extrinsic and intrinsic ocular muscles following pain in the auditory apparatus. The paper is very exhaustive and well worthy of perusal in the original. In an appendix is given a résumé of eleven cases from the literature, together with two personal observations. In the first instance, sudden reduction of vision to mere light perception due to a neuroretinitis followed by atrophy. The vision and hearing is lost in ten or twelve days' time. History of intense suffering (cephalalgia, vertigo, vomiting and prostration) at the menstrual periods with remission during the intervals; in one especially severe attack there was loss of consciousness. An old otitis media present on each side. In the second case a history of recurrent cephalalgia, dizziness, vertigo, insomnia and vomiting. In each eye postneuritic atrophy with mere light perception. Bilateral otitis sclerotica; right otitis interna. The author considers the ocular involvement in each of these two cases to be due to the aural condition, via a meningeal propagation. In the reviewer's opinion, the sudden blindness in the first case can be better explained by assuming an involvement of the nasal accessory sinuses, the phenomena (sudden neuroretinitis, cephalalgia, vertigo, vomiting, prostration, unconsciousness and aggravation at the menstrual periods, are symptoms he has noted in sinusitis). H. M. F.

One Patient's Experience with Two General Physicians, One Neurologist, One Leading Physician, One Gastrologist, Two Ophthalmic Surgeons, One Diagnostician and One Refractionist.—Gould, George M. (*American Medicine,* Dec. 23, 1905), reports a case in which the patient had suffered from profound symptoms seemingly of intestinal nature and also from psychic symptoms, such as lapses of consciousness at least closely simulating those of major epilepsy, morbid delusions, etc. His disease was diagnosed by the leading specialists mentioned as indigestion, hysteria, neurasthenia, nervous breakdown, hyperchlorhydria, etc., but all the treatments ordered had no effect in lessening the symptoms. One ophthalmologist reported to the neurologist that nothing was wrong with the patient's eyes, and then tried glasses, which gave no relief. A leading consultant made the diagnosis of eyestrain as the fundamental cause of the trouble, and soon after the ametropia had been accurately corrected by the third oculist the patient was restored to health. The lessons suggested by the case are set forth by Dr. Gould. M. D. S.

MUSCLES.

Ocular Torticollis and Sursumvergent Strabismus.—De Lapersonne (*Archives d'Ophtalmologie,* October, 1905). Graefe, in 1855, called attention to rotation of the head caused by vertical strabismus, and Cuignet, in 1873, showed that certain abnormal positions of the head treated by collars, head bands, etc., and even by tenotomy of the sterno-cleido-mastoid, were simply due to a strabismus and usually amenable to an ocular operation. The patient assumes this position of the head to avoid an annoying diplopia. The first condition for the production of ocular torticollis is that the ocular deviation shall be congenital or developed in early infancy, as a permanent torticollis is never caused by an ocular paralysis occurring in an adult.

Graefe established distinct forms of the affection. One which accompanies convergent strabismus may perhaps be explained by an anomaly of the insertion of the internal and external straight muscles whose axis of rotation is not in the vertical plane. In such cases the vertical deviation may be corrected by tenotomy or advancement of one of these muscles without interference with the elevator or depressor. That form is relatively frequent. The other form which may alone be considered as essential strabismus sursumvergent is extremely rare. Graefe had seen it only three times in thousands of cases of strabismus.

It is in the category of paralytic sursumvergent strabismus of congenital origin that we must look for cases of ocular torticollis. It is less likely to occur from paralytic or atrophic lesions of the elevator. The distorted position of the head may continue after the diplopia has disappeared on account of suppression of the faulty image.

As ocular torticollis is a question of muscular insufficiency, the author believes that advancement is a much more rational treatment than tenotomy. G. C. H.

MYOPIA.

THE PRINCIPLES OF MY MYOPIA THEORY.—STILLING, J., PROF., Strassburg, i. e. (*Zeitschrift fuer Augenheilkunde,* 1906, xv, p. 1). Since Stilling's theory on the origin of myopia has met with so many misconceptions, he thinks an exposition of his views indicated. Myopia, dependent on intense near work, is produced by a relatively great longitudinal growth of the eyeball under pressure of the exterior muscles. This, however, does not consist in a constantly increasing and finally irretrievable deformation of the eyeball, but the stretched tendons check the growing of the eyeball in directions, vertical to their planes, and, if the impediment in the longitudinal axis is least, the globe will grow mostly longitudinally and may thus become myopic. The recti exert no immediate pressure, only indirectly by pulling the globe toward the retrobulbar adipose tissue, and can not by their contraction elongate the axis of the eye through pressure. It is quite different with the loop of the obliques. Their action is inconstant, viz., *nil* if the loop is open, the greater the more it is closed, i. e., the greater the area in which the upper oblique lies on the surface of the globe or is adherent to it, as it often happens. Growth under muscular pressure is the point from which myopia develops. C. Z.

NERVOUS SYSTEM AND VISUAL ORGANS.

A CASE OF PANOPHTHALMITIS WITH BRAIN ABSCESS AND FATAL MENINGITIS.—REIS, Lemberg (*Arch. f. Augenheilk,* liii, H. 2). The patient was a 27-year-old working man with panophthalmitis following a traumatism. The treatment was by incision; on the fifth day the patient became unconscious and died. The retrobulbar tissues were found infiltrated with blood and pus and this had reached the brain beneath the dura through the supraorbital fissure. The lamina papyracea and the principal cells of the ethmoid cells were infiltrated with pus. Macroscopically the optic nerve was not involved. Large amounts of pus were found in the region of the chiasm and in the subpial spaces. In the anterior portions of the frontal convolutions, near the inferior surface of the white substance, was an abscess the size of a pigeon's egg. Macroscopic examination of the eye showed a purulent degeneration, only traces of the uveal tract being present. Microscopically there were the changes of a purulent panophthalmitis. In the region of the optic nerve entrance there was a trace of the chorioid. The optic nerve in advance of the lamina cribrosa was infiltrated with pus which was replaced by round-cell infiltration in the region of the cribriform membrane. Behind this there was only a marked nuclear development in the connective tissue. In the infiltrated portion of the nerve the central artery could scarcely be discerned because of the surrounding round-cell infiltration. This condition continued for a short distance into the nerve proper, lessened, and then finally disappeared before reaching the brain. There was round-cell infiltration of the optic-nerve sheath. Sections of the nerve showed in general marked inflammation of the inner sheath, the septa and the central artery were normal. The inflammatory infiltrate in the pial sheath increased cerebralward and extended in places into the dural sheath. The lacunæ of the bone in the optic canal were filled with pus. The course of the infection was as follows: Trauma, causing panophthalmitis, resulting in a brain abscess presumably by extension by the lymphatics. The author is of the opinion that enucleation would not have saved the patient. W. Z.

ON MENINGITIS FOLLOWING EXCISION OF THE EYEBALL.—MARSHALL, C. DEVEREUX, F.R.C.S., London (*Ophthalmoscope,* December, 1905). A strong plea is made for removal of suppurating eyes.

He does not see any reason for evisceration of the scleral contents, leaving behind the infected sclera. He does not believe that removal of the sclera with its suppurating contents involves as much danger as leaving it, nor as much danger as incising and draining it, not even as much danger as evisceration. He thinks suppurating eyes should be removed early, and that great care should be exercised in their removal not to rupture them, thereby causing infection of the wound by the escaping contents. M. B.

A Case of Syringomyelia with Double Optic Neuritis.—Weisenburg, T. H., and Thorington, James, Philadelphia (*The Amer. Journ. of the Medical Sciences,* December, 1905). The case is reported as of unusual occurrence, the writers having been able to find only two similar cases in literature. The histories of the latter and of the authors' case are given. The ocular symptoms included divergence and weakness of certain of the muscles, blindness of one eye, reduced vision and limited field in the other, double optic neuritis. The papillitis was well developed, with beginning postpapillary atrophy, and belonged to the "engorgement" variety.

The optic neuritis complicating syringomyelia can be explained either by an intracranial growth or by an internal hydrocephalus. In the present instance the optic neuritis was probably caused by internal hydrocephalus, as it was also explained in the two previously reported instances; the paralysis of the external recti muscles and the possible weakness of associated movements are accounted for in like manner. C. H. M.

On a Special Form of Atrophy of the Iris in the Course of Tabes and of General Paralysis; Its Connection with the Irregularity and Reflex Disorders of the Pupil.—Dupuy-Dutemps (*Annales d'Oculistique,* September, 1905). The author has observed in a large number of cases in which the Argyll-Robertson sign existed, and exclusively in such cases, a special atrophy of the iris, which must, therefore, be particularly connected with the affections to which this symptom belongs; general paralysis, tabes and late syphilis, acquired or hereditary.

The particular expression of the eyes in tabetics and subjects of general paralysis, which is sometimes sufficient to excite a suspicion of the diagnosis at a distance, is well known. It is independent of the paralytic fixity of the eyes, as well as of amblyopia, and is observed especially in old cases. It results from a combination of several physical changes aside from the psychic troubles connected with general paralysis, the enophthalmia and narrowing of the palpebral commissure due to paralysis of the sympathetic muscular fibers of the lids and orbits; the myosis; perhaps the irregularity of the pupils and the absence of pupillary reflex. Special modifications of the iris also contribute toward causing this membrane to lose its brilliancy and giving the eye a dull and lifeless expression.

When the surface of a normal iris is examined with a lens under bright illumination, it is seen to be traced with raised ridges, appearing as if sculptured in its substance, rather irregular in disposition and varying in different individuals. In the region of the sphincter and within the smaller circle there are radiating furrows produced by folding under the action of the sphincter; while in the neighborhood of the periphery are circular wrinkles caused by the contraction of the dilating fibers, and these ridges are increased or diminished according to the state of contraction or dilatation of the pupil. There are, besides, over the whole surface of the iris beyond the sphincter jutting ridges of various color, arranged in different planes and anastamosing to form the smaller circle whose relief is particularly pronounced. They thus circumscribe empty spaces, irregularly oval or lozenge-shaped crypts, the shadows coming from which and the play of light on their crests give to the eye its sparkling brilliancy. The thickness of the membrane is always considerably greater in the region of the sphincter where it forms a raised collar. The alterations referred to concern these projections of the iris and its thickness. When they are very decided and extend over the whole surface of the iris they are so evident that they can easily be noted even by an unskilled observer. The undulating tracts, the radiating ridges, the furrows and the crypts have disappeared, and the surface of the iris is absolutely flat, traced merely by a few striations which give no impression of relief. In the region of the pupil the iris tissue is extremely thin and no longer forms a collar raised above the plane of the lens. The iris loses its brilliant and sparkling aspect and presents the appearance of a painting in flat color. Modifications in the quantity or distribution of pigment may also have a share in this change in appearance.

This special atrophy of the iris does not pass the limits indicated above and never reaches the extreme degree observed as the result of intense and prolonged inflammation when it becomes profoundly disorganized and reduced to a thin woof, transparent in places. These two sorts of atrophy are entirely different. Not infrequently the atrophy affects only a section of the iris, while the rest of the membrane remains nearly or quite normal, or there may be two or more atrophic sections separated by normal tissue.

This aspect of the iris is not met with either in normal subjects or in the course of other ocular affections, except in chronic glaucoma, in which, at a certain period of its evolution, a similar atrophy of the iris may exist and is accompanied also by loss of light reflex of pupil.

The special atrophy of the iris is not connected with narrowing of the pupil, but has relations with the deformity of the pupil which so often accompanies the Robertson sign. The part of the margin of the pupil that corresponds to the atrophied zone is that whose curve has the longest radius. When the iris is uniformly altered the pupil is either round or irregular.

Like all other tabetic symptoms, the pupillary signs may be wanting or remain incomplete even in old cases; but when they are produced it is always in the same order; the diminution more and more marked and finally the disappearance of the light reflex; the later enfeeblement, and more rarely the abolition, of the accommodative reflex and last the disappearance of the phenomenon of contraction of the pupil during closure of the eyelids, which the author insists was first described by Galassi in 1887. The light reflex is already abolished before the atrophy of the iris is observed. In one case the atrophy appeared three years after the Argyll-Robertson sign was first noticed. When the atrophy is limited to a sector of the iris the corresponding portion of the pupil is immoveable to light. The relations between the atrophy and the absence of accommodative reflex are less positive, but in the majority of cases this reflex still persists after the appearance of the alterations in the iris, but is always lessened in promptness and amplitude; and when the atrophy is extended and complete it is the rule that the accommodative reflex has disappeared entirely. When the atrophy is confined to a sector, the loss of accommodative reaction is limited to the corresponding part of the pupil.

The Galassi palpebral reflex does not disappear completely until the iris atrophy has reached its extreme limit.

In cases in which iridoplegia from isolated lesions of the third nerve had existed for from eighteen months to six years the author found not the least alteration in the iris tissue. A lesion limited to the trunk or the nucleus of the oculomotor will not produce an atrophy of the iris; therefore, when the latter exists some other cause must be in operation. A fact which may sometimes be useful in diagnosis.

The complete iridoplegia from paralysis of the third pair only, the palpebral reflex of Galassi, is always perfectly preserved.

That atrophy of the iris is not dependent on a lesion of the cervical sympathetic, so frequent in tabes, is shown by the examination of a number of cases in which sympathectomy had been performed.

The only anatomic examination that the author has had an opportunity to make has shown a simple atrophy without trace of inflammation and involving equally the various tissues of the iris. There were, besides, at certain points, extensive accumulations of pigment.

Atrophy of the iris must result from one of two processes—either it is primitive and due to a toxic or infective lesion affecting its tissue directly, or it is secondary and is produced by trophic trouble following alterations in the nerves. The latter supposition, the author thinks, is more probable.

While in lesions of the trunk or the nucleus of the third pair the pupil preserves indefinitely all of its contractility under the influence of myotics, in most cases in which the Argyll-Robertson sign exists the instillation of eserin or atropia has much less effect.

Experimental researches have shown that after intracranial section of the trunk of the oculomotor nerve the degeneration of peripheral fibers extends, by the short root, only to the ophthalmic ganglion and is not found beyond it in the ciliary nerves; while destruction of the iris and ciliary body causes lesions extending to the ophthalmic ganglion, but no alteration in the nucleus of the third nerve. The inference is that motor fibers sent to the ciliary ganglion from the oculomotor terminate in this ganglion by free ramifications, and that the cells of origin of the fibers that innervate the intrinsic muscles of the eye are in the ganglion.

A lesion of the oculomotor or its muscles causes a complete paralysis of the sphincter papillæ by destroying the central elements which communicate to the ciliary ganglion the excitomotor influence; but the peripheric ciliary neuron remains intact and no atrophy of the iris results. So also lesions of the cervical sympathetic or of the ciliospinal center cause a paralytic myosis without producing alterations in the structure of the iris. On the contrary, a destructive lesion of the peripheral ciliary neuron or of the ciliary nerves produces not only disturbances in the contractility of the iris, but also, by trophic action, changes in its tissues.

In all the cases of general paralysis and tabes with pupillary disturbances studied postmortem by Marina, this observer found alterations in the ciliary ganglion and nerves while the nucleus of the oculomotor was normal.

As to the atrophy of the iris, diffuse or in sectors, accompanied by disturbances of pupillary reflex, which is sometimes met with in subacute glaucoma, it can also be explained by an alteration of the ciliary nerves, due either to a primitive lesion, which, according to some authors, may be the principal cause of the glaucoma, or, which is more probable, to intraocular compression of the ciliary nerves. G. C. H.

OPERATIONS.

CRUCIAL INCISION OF IRIS AND CAPSULE AT TWO DIFFERENT SITTINGS.—HIRSCHBERG, J. (*Centralblatt fuer Aug.*, 1905, p. 332), reports two cases of complicated secondary cataract, in which a useful pupil was established by a horizontal section, followed after a few days by a vertical cut, in the first case with Knapp's knife, in the second with a short narrow von Graefe's knife. V. rose from 1/100 to 5/7, and from fingers at 2 m. to 5/10. C. Z.

CUTTING THE CILIARY NERVES, WITH PRESERVATION OF THE OPTIC NERVE.—FICK, A. E., Zurich (*Zeitschrift fuer Aug.*, 1906, xv, p. 51), reports two cases of cyclitis, following discission of secondary cataract, cured by cutting the ciliary nerves and vessels. Fick gives the following explanation: He assumes that the inflammation of the ciliary body migrates backward to the nervous branches outside the eyeball. The inflammation, after reaching a ganglion, causes irritation of centrifugal vasomotor nerves, by which the inflammation is kept up and stimulated. From his cases Fick considers discission of secondary cataract a dangerous procedure. His results show that cutting the posterior ciliary arteries does not entail degeneration of the retina in man (as found by Wagenmann in rabbits), as the whole chorioid is sufficiently supplied with blood by the anterior ciliary vessels. C. Z.

CHECKING SUPPURATIONS OF THE EYEBALL STARTING FROM CICATRIZED SECTIONS.—HIRSCHBERG, J. (*Centralbl. fuer Aug.*, 1905, p. 193), reports two cases of cystoid scars after cataract extraction which commenced to suppurate five and one-half years later. The scar was purulent, the pupil covered by a purulent membrane and hypopion. Hirschberg cauterized the scar and cornea with galvanocautery, opened the anterior chamber at the lower limbus and removed hypopion and purulent membrane with a pair of forceps. In both cases the eyes, which had seemed completely lost, were saved. It is of the greatest importance that this treatment be commenced at once. C. Z.

Restoration of Socket for Carrying Artificial Eye.—Doyne, Robert W., M.A., F.R.C.S., London (*Ophthalmoscope*, November, 1905). This operation is intended for the restoration of the lower lid and sulcus, where the carrying power of the lower lid has been destroyed by wearing an artificial eye which has become rough, or one which has always been a misfit. Under these circumstances the lid has become everted and flattened, while a mass of cicatricial tissue has formed on its surface. The steps of the operation are briefly as follows: A large needle, threaded with stout silk, is passed from the conjunctiva of the lid beneath the skin and made to merge in the patient's mouth, between the cheek and the gum at a point opposite the angle of the mouth. The needle is withdrawn and threaded with the other end of the silk and again passed through the conjunctiva about half an inch away from the first puncture, and made to emerge in the mouth at the same point as the first puncture. The two ends of the suture are next tied over the end of a match or piece of rubber tubing, and this is given a twist two or three times a day until the silk cuts out. This generally happens in the course of three weeks, leaving a band of cicatricial tissue which by traction at its base effectually raises the lower lid. M. B.

Tenotomy and Advancement.—Froelich, Prof. Conrad, abridged translation from the German edition, xlv-vi, August, 1902, by Foster, M. L. (*Archives of Ophthalmology*, November, 1905), states that permanent unobjectionable results do not often follow tenotomies; that an artificial divergence may follow a tenotomy, especially in children; that most of the results are cosmetically only moderately good; that in few cases is monocular vision transformed into binocular, and that the primary results are greatly modified in the course of time by subsequent purely mechanical conditions and by the act of vision, so that they may be even reversed. Froelich believes that an advancement gives more satisfactory and permanent results than tenotomy.

The author gives the details of his advancement operation and advises stretching of the opposing muscle in connection with it. He also lays great stress on the postoperation treatment and adds that "the operation is the course, the after-treatment the fine, work in the regulation of the balance of the eyes and the play of the muscles." The ends of the suture are not cut, but formed into a loop passed around the ear and gradually tightened so that the final adjustment can be made later, if desired. The author reports that over-effects rarely occur and states that "the correction of a slight deviation by a unilateral, and that of a moderate degree by a bilateral advancement, leave nothing to be desired." W. R. M.

TREATMENT OF PULSATING EXOPHTHALMUS.—SCHWABACH, G., Berlin (*Klin. Mon. fuer Aug.*, 1905, ii, p. 475). With reference to Sattler's method of operating for pulsating exophthalmus (reviewed in January OPHTHALMOLOGY), Schwabach reports the following case: A boy, aged 12, was injured by a knitting needle, which pierced the medial portion of the left upper lid in a direction toward the nose. Half a year later the upper lid commenced to swell from exophthalmus, and the finger felt a variation in the depth of the orbit, so that the diagnosis, aneurysma arteriovenosum of the left internal carotid and the cavernous sinus, was made. After ligating the left common carotid the vibration subsided, but not the blowing murmur. Therefore, Schwabach entered the orbit by an incision at the supraorbital margin extending from the medial to the lateral angle and through Tenon's capsule. Resection of 4 cm. of a very tortuous vein of varying lumen, after double ligation, stopped the blowing noise at once. The eyeball resumed its normal position and the wound healed *per primam*.

From this and Sattler's observations Schwabach recommends for the treatment of pulsating exophthalmus at first to resect the aneurysmatic varix, and, if not sufficient, to ligate the carotid artery. Since the ectatic vessels almost always lie near the medial wall, they can be easier and less dangerously approached through the upper lid than by Kroenlein's resection of the lateral orbital wall.

C. Z.

IS THE MUELLER INTERIMS-PROTHESE HARMLESS?—HERM. Ulbrich (*Die Ophth. Klinik*, No. 15, 1905). The Mueller prothesis consists of a hollow glass body of the form of the conjunctival sac, having in the middle a sagittal canal which gives free drainage to secretions. Herm reports a case of death from general sepsis following the employment of this device. The right eye had been enucleated for sarcoma of the ciliary body. On the tenth day a purulent inflammation of the left ankle joint associated with a bronchitis developed. The conjunctival sac was well healed, but there was a free discharge. The patient died on the seventeenth day. Postmortem showed the wound area covered by a thick yellow secretion, but the orbital tissues were free from pus. There was atrophic pancreatis, steatosis renum, emphysema pulmonum, polyposis ventriculi, carcinoma secundarium glandularum lymphaticarum regionalium. Bacteriologic examination of the conjunctival secretion and of the exudate into the joint showed large quantities of streptococci. The author thinks that from these findings there can be but little doubt that the synovitis was due to metastisis from the eye. W. Z.

The Interims Prothese and the May Operation for Symblepharon.—Holth, Christiania (*Die Ophth. Kl.*, No. 19, 1905), states that it is a mistake to believe that he uses the interims prothese after ordinary enucleation. He employs it after the May symblepharon operation in order to obviate what to him has been an annoying and disturbing complication—retention of secretion behind the shell. It will be recalled that the author's prothesis has a sagittal canal.

Magnet Operation in Children.—Hirschberg, J. (*Centralblatt fuer Aug.*, 1905, p. 265). Four cases of recent injuries, a few hours or a few days old, healed well. The fourth came, two years after the injury and after nine different unsuccessful attempts of extraction of the foreign body had elsewhere been made, Hirschberg removed a piece of iron, weighing 0.025, with giant and hand magnets from the blind eyeball. Recovery without irritation. But, on account of recurrent inflammation, the eye had to be enucleated five years later. The anatomic condition found by Dr. Ginsberg is given in detail. The detached retina, pigment epithelium, the epithelium of the ciliary body yielded iron reaction.

A defect in the chorioid, caused by the giant magnet in the opened eyeball, deserves special mention. To avoid this Hirschberg employs only the hand magnet when the eyeball is opened. C. Z.

A Few Remarks on the Extirpation of the Lacrimal Sac.—Jocqs (*La Clinique Ophtalmologique,* Jan. 25, 1906). Jocqs believes there should be no difficulty in reaching an accord on the subject of the necessity of applying radical treatment in old suppurative dacriocystitis or in simple ectasia of the sac. He claims that all conservative treatment is illusory when the sac is chronically dilated. It is well known that it is possible to have a dacriocystitis without dilatation, and then it is possible to obtain a cure by simple treatment, as in the dacriocystitis of the new born from imperforate canal and as in the case which follows operations on the maxillary sinus. But the same radical treatment is not applicable to all lacrimal canal wall thickenings, Jocqs making the difference between old and voluminous enlargements with or without fistula, but suppurating for a long time, and simple ectasia of the sac which has not as yet been the site of a phlegmon. In the first instance there is always a pericystitis and the anterior wall of the sac is perforated and destroyed in large part; there should be no question here as to extirpating the sac, it being impossible to make a curettage more or less complete. It is otherwise when we find the presence of a sac regularly dilated which contains seropurulent fluid, with the anterior wall intact. Here we have a canal which can be completely cured.

Jocqs thinks it surprising that authors who have given attention to this subject have not insisted on these differences from the operative standpoint. Jocqs' object in his paper is not to review this question, but only to accentuate a few points as to the operative technic of extirpation, believing that, if the operation is not more commonly adopted, it is because of the difficulty of a complete and satisfactory procedure. One of the embarrassing features of the operation is that of seizing firmly and holding the sac during the dissection of the walls from their surroundings. In order to remedy this it has been suggested to fill the sac with a hard substance or inject it with a liquid which will solidify, such as paraffin, etc. Doubtless this facilitates the operation very much, defining, as it does, clearly the sac contour; but further in the operation there may be this difficulty, that with the sac filled with a hard substance which may interfere with the forceps seizing the tube, which latter if torn allows of the escape of the substance. Jocqs employs a small ball of cotton which he stuffs into the sac after having made a vertical opening into it. The sac should not be completely filled, in order that the edges of the incision may be coaptated and be held by a forceps with large non-cutting teeth. Jocqs uses for the purpose a small hemostatic forceps which grips firmly without cutting. Having a secure hold the sac is carefully detached from its surroundings with small cuts of the knife, as far as possible; then it can be removed very rapidly by two or three deep strokes with the knife, beginning at the upper part. It may be well to use the scissors for separating the inferior attachments, which latter are the last to be divided. Jocqs finishes the operation by catheterizing the canal with a number 3 or 4 sound and sometimes with many sounds of increasing caliber. He does this to insure drainage for the few days required to produce cicatrization. B. E. F.

OPTIC NERVE.

A Peculiar Ophthalmoscopic Finding Corresponding to the Course of the Papillomacular Fibers.—Brückner. Wurzburg (*Arch. f. Augenheilk.*, lii, H. iv). The patient was a man of 32 years. Sight in the right eye had been failing for ten years and finger counting at 1 m. The fields for white and color were full. There was an absolute scotoma extending 15° templeward and 8° nasalward, upward and downward. The whole blind area corresponded to the papillomacular fibers. The papilla was quite pale. Over its temporal half there was a bluish-gray blur which extended from the temporal edge of the excavation to the disc's edge, where it was much contracted, and from this point widened out to the macular region, gradually losing its gray-white color and permitting the fundus red to show through its striated structure. Against the assumption that the condition was one of retained nerve sheath of the papillomacular fibers was the statement of the patient that in military duty he had sighted with his eye. There was nothing in the history or in the examination pointing to a traumatic degeneration of this bundle. The usual history and appearances of a retrobulbar neuritis were absent. The author offers as an explanation a degeneration of the papillomacular bundle produced either primarily or secondarily by connective tissue formation (neuroglia).

W. Z.

Inflammatory Affection of the Ciliary Ganglion Associated with Retrobulbar Neuritis.—Hay, Percival J., M.D., Edin. Birmingham, England (*The Ophthalmoscope,* November, 1905). The author is unable to find any reference to this subject in medical literature, and yet he considers it reasonable to suppose that the ciliary ganglion is not immune to inflammation. His patient was 38 years of age and complained of pain back of his eye and of loss of vision, which was found reduced to 6/60. Pupil dilated and fixed. Cornea insensitive in parts. Nothing appeared abnormal with the ophthalmoscope. Visual fields lost on nasal side, including central vision. Rapid recovery followed the administration of iodid of pot. He thinks the presence of an inflammation in the ciliary ganglion explains the paralysis of the sphincter pupillæ and the corneal anesthesia, and that the close proximity of the ganglion to the optic nerve, posterior to the entrance of the central artery, caused an inflammation of the contiguous nerve structure. He reasons that if the inflammation of the nerve had been anterior to the entrance of the artery there certainly would have been arteritis and thrombosis of the central artery. M. B.

Changes in the Optic Nerve and Sheath after Purulent Cerebrospinal Meningitis.—Vollaro, A. de Lieto (*Archivio di Ottalmologia,* xii, Fasc. 1-2, 1905. Abstracted in the *Clinica Oculistica,* October, 1905), reports the microscopic findings in five cases. He believes they establish the truth of the statement that pyogenic germs are unable to penetrate the optic nerve from the meninges along the sheath, although they undoubtedly gather in large numbers in the exudate which forms around the chiasma and along the intracranial route of the nerve. Arrest of this microbic infection has been observed by Axenfeld and is explained by Vollaro by the existence of a widespread infiltration obstructing the entrance to the bony canal where the nerve enters, the infiltration evidently occurring early and obstructing the lymphatics. This will account for the rarity of ophthalmoscopic findings in meningitis. When such signs are discovered, they are not due to the direct action of microbes, but to poisoning by their toxins supplied from a distance. The author thinks it not impossible that the micro-organisms may penetrate the sheaths of the nerves, but he believes it to be the exception, and when it does occur it is probably due to special conditions, as, for instance, when the meningitis is the result of a brain tumor, with "choked disc." The dropsical distension of the sheath in such a case would facilitate diffusion of the germs. He adds that his research suggests that bilateral blindness with negative ophthalmoscopic findings, such as is observed in certain cases of meningitis, may be regarded as due to a circumscribed lesion of the nerve in its passage through the bone.

C. A. W.

ORBIT.

INTERMITTENT EXOPHTHALMUS, WITH REPORT OF A CASE.—ALGER, E. M., New York (*N. Y. Med. Journ.*, Jan. 27, 1906), reviews the literature of this rare condition and reports an original observation in a woman of 34. When she stoops over, wears a tight collar, or pressure is made with the fingers behind the angle of the jaw, the eye immediately begins to push slowly forward, while a venous congestion of both lids is apparent. At the same time there is a distinct ptosis of the upper lid varying with the degree of the exophthalmus. This condition first came on suddenly, five years previously, while the patient was bending over and buttoning her shoes. It disappears when she straightens up or when pressure behind the jaw is removed. There is no pulsation or bruit about the orbit. The vision of the eye is entirely gone. The disc is atrophic. About 40 cases have been collected. The term "voluntary exophthalmus" is not always applicable, not all patients being able to produce the condition at will by holding the breath. Over half the cases are in males who gave a history of marked sudden muscular effort just before the first appearance of exophthalmus. Specific disease of the veins of the orbit may be an etiologic factor. In typical cases the eye protrudes whenever the head is in a dependent position, as in stooping over, or when venous congestion is produced by local pressure on the neck or by muscular exertion, as in lifting or the like. This is not to be confused with "pulsating exophthalmus," which is due to a rupture of the carotid into the cavernous sinus and causes a persistent proptosis with marked pulsation and bruit. The eye can be replaced by pressure, but does not go back spontaneously. Deep pressure over the vessels of the neck stops the vascular signs. Hemorrhage into the orbit may complicate a case of intermittent exophthalmus and obscure the diagnosis. There is no record of an autopsy. Surgical interference is justified if vision is failing. Kroenlein's operation might permit the removal of a clot or the resection of a varix. P. H. F.

PARASITES.

Subconjunctival Cysticercus.—Cosmittatos, Athens (*Annales d'Oculistique,* October, 1905). The order of frequency in the localization of ocular cysticercus is the vitreous body, the retina and the conjunctiva. Reports of subconjunctival cysticercus are not numerous. Graefe met with it only once in eighty thousand patients. Hirschberg has seen it five times since 1894. Cysticerci are most numerous in Germany. They are more rare in France and never have been reported in Greece, though the author thinks that microscopic examination would have shown some, as hydatid cysts are quite common. Cosmittatos reports a case in which the white or yellowish disc corresponding to the head of the animal was wanting and only the microscopic examination revealed its true character. The usual seat of subconjunctival cysticercus is at the inner angle of the eye.

As to the explanation of the presence of cysticercus beneath the conjunctiva, local causes, such as traumatism, have been suggested, but there were none such in the present case. G. C. H.

A Case of Echinococcus of the Orbit.—Treu, Spalato (*Arch. f. Augenheilk.,* liii, H. 2). The patient was 28 years of age. She had first noticed exophthalmus 9 years previously, which had perceptibly increased at each of the three subsequent confinements, but not to a disfiguring degree until after an energetic palpation two months previously. There was marked edema of the conjunctiva, causing it to hang in a fold 35 mm. in height and 10 mm. in thickness. The proptosis was extreme, the eyeball lying almost entirely outside the orbit. Movements markedly limited in all directions. Pupil contracted. V. = finger counting at 4 m. Only to the outside, by firm pressure, could a firm resisting mass be felt. The history of the case indicated a benign growth. Krönlein's operation was done, and the whole orbit found filled with a flat elastic nodular growth. On incising this it was found to consist of 8 fluid cysts. Twenty-five days later the exophthalmus measured 10 mm. and V. = 5/50. W. Z.

PATHOLOGY.

TWO EYE DISEASES OF CHILDREN OF INTEREST TO THE GENERAL PRACTITIONER (PHLYCTENULAR CONJUNCTIVITIS AND KERATITIS). —MOFFET, H. C. (*Iowa Medical Journal,* Oct. 15, 1905), calls attention to the principal histologic elements of the cornea and describes the pathologic processes in phlyctenular conjunctivitis and keratitis. After mentioning the more common factors in the production of this disease, he says that of late some evidence has been offered to substantiate the claim that nasal catarrh and obstruction are etiologic factors.

In conclusion, he places some stress on the remarkable disparity between the pathologic indications and subjective symptoms found in phlyctenular keratitis.

Histologically we know that naked axis cylinder processes extend from the substantia propria into the anterior epithelium of the cornea. Perhaps in some cases they are not so abundantly distributed. On the other hand, there is a possibility that the bacillus or variety of bacilli causing this disease are variable in their virulency.

In one case their presence may be just sufficient to cause an infiltration and irritation of the nerve endings with marked symptoms, while in another case they may not only cause an infiltration, but temporary paralysis of the nerve endings with almost no subjective symptoms due to the virulency of their toxins. M. D. S.

HISTOLOGIC EXAMINATIONS OF CONJUNCTIVITIS GONORRHOICA NEONATORUM.—SCHRIDDLE, H., privatdocent (From the pathological institute of the University of Marburg. *Zeitschr. fuer Aug.,* xiv, 1905, p. 525). The whole mucous membrane of the lids is more or less covered and permeated with neutrophile leucocytes. The first changes of the epithelium consist of a loosening of their connection by leucocytes and gonococci, which penetrate to and even into the subepithelial tissue and are generally found free between the cells. Only at the surface they are inclosed in leucocytes. In a more advanced stage ulcers are observed, covered with dead epithelia and leucocytes, imbedded in fibrin. Some ulcers show granulation tissue which finally becomes cicatriced. These small scars, however, will be macroscopically visible only in very rare cases. C. Z.

IS THE USE OF ELECTRIC LIGHT INJURIOUS TO THE HUMAN EYE?—DRAKE-BROCKMAN, E. F., F.R.C.S., England (*The Ophthalmoscope,* October, 1905). Six cases are presented of patients who complained of asthenopic and inflammatory symptoms from the use of their eyes by electric light. The symptoms were promptly relieved when lamplight was substituted. The author is sure that electric light is injurious, but thinks the subject worthy of consideration. M. B.

FAILURE OF CLOSURE OF AN EXTRACTION WOUND DUE TO EXFOLIATION OF EPITHELIUM.—BERKA, Prag (*Arch. f. Augenheilk.,* liii, H. 1), reports this case in support of the view of Wagenmann that most cases of late infection after cataract extraction or injury to the globe are not of endogenous origin, but due to porocity of the scar and secondary invasion of bacteria. The author's case was as follows: An eye operated on for cataract four months previously, the seat of a chronic iridocyclitis with a very shallow exudate in the anterior chamber, was enucleated because of intense pain. Anatomico-pathologic examination showed the cornea of normal thickness and curve. Epithelium and Bowman's membrane normal. The substantia propria was somewhat separated in the lower part and traversed by a continuous line of separation extending from the limbus, from above and behind to below and forward, where it terminated beneath the conjunctiva. Conjunctival epithelium normal. Substantia propria showed round-cell infiltration; vessels somewhat dilated. Anterior chamber contained fine fibrous coagulum, some round cells, mostly polynuclear, and a few red cells. On the normal endothelial membrane of Descemet's membrane which was intact except at the wound there was a precipitate of round cells and red corpuscles. There was also a large number of pigment cells from the ligamentum pectinatum. The iris was somewhat thickened and infiltrated with round cells equally in the anterior and posterior surfaces. The pupil was occluded by connective tissue membrane. The center of the pupil contained a blood mass, the surface of which was covered by fibrous tissue. The lower angle of the anterior chamber was retained and filled with white and red blood cells. The iris is in part in contact with the posterior surface of the cornea above. The lens capsule is interrupted equatorially and lies in many folds against the iris and in the pupil. Between the capsule and the iris there was a thick membrane infiltrated with leucocytes and large vascular branches. The nucleus of the lens lay in the posterior chamber. The space between the anterior surface of the nucleus and the capsule was filled with a membrane, showing in places a finely fibrous reticular structure. Next to the nucleus there was a round cell membrane with shoots between the lens fibers. Here were also found giant cells. The ciliary body was not much altered; above and below were masses of leucocytes and red corpuscles. The retina and chorioid above were normal, below, sligthly infiltrated with round cells. The vitreous was cellular. In the region of the corneal scar were the following conditions: The scar traverses the cornea from above and behind to below and in front. Just in front of the ciliary body Descemet's membrane was correspondingly cut. The posterior part was about as long as the thickness of the cornea. The anterior lip of the wound was blunt; the posterior acutely angular, and appears in tranverse tongue shaped. The point of the tongue lies completely against the anterior lip of the wound, in the inner surface of the cornea only a thin strip of pigment separating them. The rest of the wound, on the contrary, with the exception of this point, was adherent for three-fourths of the corneal thickness. Within it lies richly cellular tissue. The wound is covered by conjunctiva having epithelium of irregular thickness. There were collections of leucocytes beneath the epithelium and scattered pigment cells just over the wound. From the upper of these pigment collections a track of small pigment cells penetrates beneath the epithelium. By great magnification it is seen that the epithelium at this point is broken in its continuity by a tortuous crevice. This crevice began in an epithelial funnel, forming an upper and a lower limb. The upper lid was rounded off, the lower thinner one leads deeper into the conjunctival tissue, as a result of which its thinner posterior end is shoved beneath the upper lid in an antero-posterior direction. The fissure itself appears very narrow, but in its further course, at a point about the middle of the conjunctival tissues, it again broadens. From here it could be traced as a narrow continuous fissure up to the large pigment collection. In the region of the fissure are numerous vessels, in the lumen of which was an amorphous detritus, a few epithelial cells and numerous blood corpuscles which probably arose from a hemorrhage into the conjunctiva. On the inner side of the scar were large pigment masses. In other sections the lens capsule was entangled in the wound, which it held open. The described crevice measured about three-fourths mm. in length. No pathologic changes were found in the posterior segment of the eye. Bacterial examination was negative. The author says that in this eye it was very unlikely that the chronic iridocyclitis was caused by bacteria by this cleft, and there was neither an ulceration of the superficial layers of the epithelium nor a purulent degeneration in the adjacent parts leading within the eye. Still it can not be excluded that bacteria could thus enter and excite a severe inflammation. Such fine changes as this cleft could not, of course, be diagnosed clinically. W. Z.

PHYSIOLOGY.

STIMULATION OF THE INTEGUMENTARY NERVES OF FISHES BY LIGHT.—PARKER, G. H., Harvard (*Am. Journ. of Physiology*, vol. xiv, No. 5), experimented on young lampreys (ammocetes), and summarizes his observations as follows:

1. Ammocetes is negatively phototropic and photo-dynamic, i. e., both the direction and the rate of its swimming are dependent on light. 2. Its eyes are not essential in these reactions to light. 3. Its integument is sensitive to light, and this sensitiveness is greater in the tail than in any part of the trunk or head. 4. The terminal organs for light reception in the skin are in all probability the free nerve terminals of the spinal nerves. 5. This sensitiveness of the vertebrate skin to light is probably a remnant of that primitive condition from which the lateral retinas were derived, and possibly served as a basis from which the temperature terminals of the skin in the higher vertebrates developed. P. H. F.

EXPERIMENTAL STUDIES ON THE DEVELOPMENT OF THE CORNEA IN AMPHIBIA.—LEWIS, WARREN H., Baltimore (*Journ. Experimental Zoology*, vol. ii, No. 3), gives the results of his studies on Amblystoma punctatum. It seems very probable that the optic vesicle brings about lens formation through a specific influence, but such a factor can hardly explain the formation of a cornea, i. e., the thinning and clearing of the skin and loss of pigment. The author summarizes his observations as follows:

1. A normal cornea will not develop without the eye. 2. The size of the cornea varies with the size of the eye; with the area of contact between it and the skin. 3. Contact between eye and skin is a necessary factor, as an eye separated from the skin by mesenchym will not cause corneal formation. 4. The optic cup alone (without the lens) can cause corneal formation. 5. The lens alone (without the optic cup) can cause corneal formation, provided, as is the case with the optic cup, it is in contact with the skin. 6. The size of the corneal area over the optic cup or lens is dependent upon the area of contact between these structures and the ectoderm. 7. It is not necessary that the lens should be first formed from the skin in order to have corneal formation. 8. The cornea will develop from strange epidermis, other than that which normally forms the

cornea. 9. After the cornea is once formed it degenerates and disappears after extirpation of the rest of the eye. 10. The cornea is neither predetermined nor self-differentiating. 11. The cornea is dependent upon the correlation between the eye and the overlying ectoderm for its origin. P. H. F.

On the Innervation of the Stroma Cells of the Iris.—Muench, Karl (from the eye clinic of Prof. J. von Michel in the University of Berlin, *Zeitschrift f. Aug.*, 1905, xiv, p. 130), shows on clear specimens the connection of nerves with the stroma cells of the uvea, the muscular nature of which he had demonstrated in vol. xii, p. 525. After many tedious experiments, Muench found a reliable method to solve this difficult problem, which is given in detail. With this he ascertained in the stroma of the iris of monkeys two well-distinguished cell elements: the stroma cells, characterized by their (individually different) contents of pigment and their ramifications, of the same diameters as that of the nuclei, and numerous wetstone-formed, small roundish cells, not pigmented, with a nucleus filling almost the whole cell. These are nerve cells, primitive ganglion cells, and form nodal points of a fine net of nerve fibers pervading the whole stroma of the iris. At numerous places immediate connections exist of various fashions between this net and the net of the stroma cells by simple contact, a swelling of the nerve fiber to a small flat cone (tache motrice of Ranvier) which lies on the body or a branch of the stroma cells, or the ganglion cell itself forms the terminal swelling and is situated directly on an indentation of the stroma cell.

The illustrations to these interesting and important investigations are excellent. C. Z.

REFRACTION AND ACCOMMODATION.

A Peculiarity of Mixed Astigmatism.—Schoute, G. J. (*Tydschr. v. Geneesk*, Jan. 21, 1905), mentions that a light point forms a diffusion circle in the ametropic eye. With the stenopaic slit a diffusion line remains parallel with the slit. Black lines with white intermissions are seen sharply only when they have the same direction with the slit, because then the diffused light falls over the lines and does not veil the intermediate spaces. The mixed astigmatic eye makes an exception to this general rule. In such an eye an emmetropic meridian must exist between the myopic maximum and hypermetropic minimum. A stenopaic slit before this meridian shows only black lines with white intermissions sharply when they are perpendicular to the direction of the slit. The emmetropic eye sees lines in all directions sharply through a stenopaic slit.

The deduction with demonstration must be looked up in the original. The emmetropic meridian only partly merits its name; it can not concentrate the rays, which go from one light point to one point of the retina. A diffusion line is formed with the consequence that the black line with white intermissions can not be seen sharply in all directions as in the true emmetropic eye. If these lines are parallel with the stenopaic slit, than the direction is so, that all intermediate spaces are veiled by the diffused light. Only when the lines are perpendicular with the direction of the slit the diffused light falls over the lines themselves, so that in that case the mixed astigmatic eye receives a sharp and distinct retinal image.

Straub often found with the correction of mixed astigmatism the radii figure of Snellen insufficient; patients prefer another direction of the axes of the lenses than are found with the figure of Snellen. Faber found that when he put an incompletely correcting lens the patients prefer an axial direction which differs from the principal direction with Javal's instrument. E. E. B.

RETINA.

On the Etiology of Formation of Holes at the Macula Lutea. Retinitis Atrophicans Centralis (Kuhnt).—Reis. William (from the eye clinic of the University of Bonn, *Zeitschrift f. Aug.*, 1906, xv, p. 37), describes 4 cases, in 1 of which spontaneous formation of a hole at the macula was observed in the course of retinitis albuminurica. In all probability spontaneous and traumatic formations of holes at the yellow spot are the consequences of a local hydrops of the central portion of the retina. The hydrops is either mechanical from congestion during and after birth, vascular paralysis through contusion, changes of the walls of the blood vessels through *x*-rays, or of dyscrasic origin, due to constitutional affections of the blood vessels, as arteriosclerosis, lues, nephritis. C. Z.

Remarks on a Case of Detachment of the Retina.—Craig, James A., Belfast (*Brit. Med. Journ.*, Dec. 23. 1905). The writer reports a case of this condition in which the treatment was unusually satisfactory; the affection was recognized early before central vision was impaired and the result of treatment was V. 6/6. A young healthy patient presented himself with a clearly marked detachment of the upper quadrant of one eye, with a corresponding defect in the field and V. 6/6; he complained only of an uncomfortable sensation in the affected eye and this had lasted three weeks. There was M. 8 D.

Treatment was begun with dorsal decubitis, subconjunctival injections of 2 per cent saline and diaphoresis by daily hypodermic injections of gr. 1/3 pilocarpin. At the end of a week no improvement having taken place, the subretinal fluid was evacuated by scleral puncture; the immediate effect was satisfactory, but after four days the retina again became detached. Then the sclera was again punctured, and in addition the galvano-cautery was applied over the seat of the operation with the intention of setting up enough adhesive inflammation of the parts to fasten down the retina. The immediate effect was successful, but the detachment recurred after eight days. The puncture and cauterization were repeated and the condition was cured in this manner after a third cauterization at the end of another week; dorsal position was maintained for ten days and then the patient was allowed to go home.

At first there was a relative color scotoma over the seat of the detachment, the fundus showed slight opacity and one or two punctate deposits of exudate in the affected portion, and more peripherally the position of the punctures and cauterizations could be easily seen as deeply scarred and pigmented surface. Twenty months later vision was 6/6, no sign of detachment could be detected and the scotoma had improved so that colors were appreciated, but blue appeared darker.

The writer calls attention to the following points in the case: 1. The inefficiency of subconjunctival injections even in conjunction with rigid dorsal decubitus. 2. The prompt response to puncture, followed by the tendency to relapse, even while the decubitus was maintained. 3. To the effective result apparently obtained by the cautery, to which measure he attributes the success of the result. C. H. M.

Treatment of Detachment of the Retina.—Ramsay, A. Maitland, Glasgow (*Medical Press*, Jan. 31. 1906, Report of January Meeting of Ophthal. Soc. of the United Kingdom). This paper is based upon records of 50 consecutive cases treated at the Glasgow Ophthalmic Institute during the four years ending 1905.

The active treatment consisted in subconjunctival injections of 5 to 20 minims of 1 in 2,000 bicyanid of mercury with 8 per cent. chlorid of sodium solution, the severe pain that always followed being mitigated by the addition of a few drops of 1 per cent. acoin solution. The injection was repeated as often as might be necessary, at intervals of from four to six days; and if no decided improvement showed itself within a fortnight. free diaphoresis was induced by the subcutaneous injection of from 1/8 to 1/4 of a grain of pilocarpin, this alternating with the subconjunctival injections. If the site and character of the detachment were deemed favorable, the subretinal fluid was always evacuated by scleral puncture. The patient was kept prone in bed with his eyes bandaged, and every effort was made to improve his general well-being by careful attention to diet and to the action of the bowels, kidneys and skin. Marked chemosis of the conjunctiva was essential, and when the reaction to the subconjunctival injections was absent or ill marked, 1 to 2 per cent. of dionin was added to the bicyanid and chlorid of sodium solution. Of the fifty cases treated, ten showed a decided improvement, and thirteen a moderate improvement, though of the former group five, and of the latter group two, relapsed at intervals varying from two weeks to four years. The more recent the detachment the more favorable the prognosis, but the pathologic antecedents of the affected eye were more important than the duration of the condition. Failure was the rule in all cases marked by a seriously degenerated chorioid, a pupil sluggish to mydriatics, a much diminished tension, and a red-colored separation. The method of treatment outlined was simple, applicable to all cases, and, as far as the author's experience went, never did any harm.

C. H. M.

A RARE AFFECTION OF THE RETINA.—VAN GEUNS (*Tydsch. v. Geneesk,* Jan. 21, 1905), demonstrated the following condition: A large closed ring, formed by very small round white dots, circles the papilla nervi optici and the macula. In some places these spots are less numerous and farther away from each other, so that a broad diffuse lint is formed; in other parts very many are together, so that a sharply defined white band is formed, of which only the margin shows the formation of spots. The ring lies partly in the periphery, but in the macular region it approaches. The very broad and diffuse ring comes near the papilla at the upper part. Gray patches are found in the periphery at the lower temporal side, which seem to be elevated. A grayish, branched streak, perhaps a fold of the retina, is seen in the periphery below. Some vessels only are changed; the vena temporalis looked sometimes swollen like a rosary. Arteries and veins stop suddenly at the gray patches, temporally below, they disappear or become very thin. The vessels go undisturbed over the white ring; the branches which go to the ring are sometimes very thin.

The first change was noted by Noyon in August, 1903, when he found a white spot temporally below near the swollen vein with cluster-like form; the papilla was diffused and the veins strongly dilated. The above-given description dates from February, 1904. This summer (1904) Haab saw the patient and found the right eye normal, left eye vision with — 0, 5 D. S. ⌣ — 0, 75 D. cyl. = 1/3. The visual field exists only for the under part and goes at the right and left side of the fixation point, only a little over the horizontal meridian. Color field is smaller than normal in the existing part. The white color of the retina reached below to the optic nerve. A moderately extensive solutio retinæ with a partly transparent retina is seen below at the temporal side. A not sharply defined red spot is seen on the solutio. The vena temporalis inferior is obviously large. The nature of the red spot can not be decided. The vessels go everywhere over the spots and dots; the papilla is slightly hyperemic.

In December, 1903, the limits of the visual field were only a little narrower than normal for the temporal part, for the upper nasal part already obviously narrower and a moderately large scotoma existed there near the upper limit; it was somewhat narrower below at the temporal side. The central vision was then after correction ± 1/2.

Lues was regarded as the cause, as the patient suffered years ago from an obstinate palpebral ulcer in the neighborhood of the external canthus of the left eye, which was declared by one consultant to be an ulcus durum; other signs of syphilis never appeared. Arthritis and rheuma may be thought of, as the patient suffered from an episcleritis of his right eye; and also tuberculosis must be considered, as the patient's father seems to have had a tuberculous affection (fistula ani). In retinitis circinata the ring is much smaller and only around the macula. E. E. B.

CLINICAL CONTRIBUTION TO MEDULLATED NERVE FIBERS IN THE RETINA. — TERWELP, ANTON, Wissel (*Inaugural Dissertation*, Giessen, 1905). In 122 out of 50,362 patients of the university eye clinic at Giessen, examined with the ophthalmoscope, within the last fifteen years, medullated nerve fibers in the retina were found accidentally, the patients coming for other ocular ailments. In 16 out of the 122, the white patches commenced some distance from the disc, in one more than a diameter of the disc. Since the medullar formation advances from the center toward the periphery and the medullated fibers in the retina of the new-born rabbit do not appear until the tenth day of life, v. Hippel infers that also in man they develop some time after birth. The youngest patient was 3 years old, the oldest over 70. Ocular complications were found associated with, but not caused by the medullated fibers. They create no symptoms, and are only of developmental interest. The fibers ran in various directions, but never downward and inward. Five cases are described in detail. One case was complicated by atrophy of the optic nerve, but it is not stated whether the fibers had also become atrophic and had lost their medullary sheath, as might be expected after the observation of Wagenmann. C. Z.

Detachment of the Retina Cured by Operation More Than Twenty-three Years Ago.—Cohn, Herman (*Medizinische Blätter,* Jan. 4, 1906). The author examined a patient in 1865, and found him suffering with a myopia of 5 D.; seventeen years later, in 1882, he was re-examined with the result that the myopia was still 5 D. and his vision diminished to 1/20; and aside from this, the retina was detached in the lower part nearly up to the optic nerve. Puncture of the sclera was performed, after which a great deal of fluid escaped beneath the conjunctival sac; a compression bandage was applied, and the patient ordered to be on his back. Syrup jaborandi and laxatives were also administered. Fourteen days later the detachment was found perfectly cured and vision was 2/16. Four weeks later the patient noticed suddenly a new diminution of vision. Examination revealed a new detachment in the upper and outer quadrant of the retina, whereas the previously detached part was perfectly adherent now. Vision 1/60, a second puncture of the sclera in the region of the new detachment was made, and after eight days it had entirely disappeared.

Examination twenty-three years later showed: Right eye M. 16° V. = 2/18, J. = 1.5. Left eye M. 15° V. = 2/12, J. = 0.5. Perimeter normal L. = ¼. opacities in the posterior cortex; but the nerve with a large posterior staphyloma could still be seen. No atrophic spots in the chorioid. No pigment in the retina. No signs of previous detachment visible.

Detachment of the retina is not a very frequent disease, and a cure lasting any length of time is very rare. G.

Idiopathic Hemeralopia.—Hand, Johann (*Wiener Klinische Rundschau,* Dec. 31, 1905). Hemeralopia occurs in cases of opacities of the cornea and lens, in retinitis pigmentosa, chorioiditis peripherica, ablatio retinæ, etc., and sometimes it may be idiopathic.

In idiopathic hemeralopia acuteness of central vision at diminished illumination decreases first, while in retinitis pigmentosa and in the other affections peripheric vision is the first to be diminished. In the latter diminution of vision is permanent, in the former only temporary. In idiopathic hemeralopia ophthalmoscopic examination of the interior of the eye shows it to be in normal condition.

The cause of idiopathic hemeralopia is an impoverished nutrition of the retina (torpor retinæ), whereas in nyctalopia there seems to be a hyperemia of the retina.

Idiopathic hemeralopia may sometimes be caused by impoverished nutrition or dazzling light; snow shovellers by constantly looking at the white snow sometimes may acquire the condition. The affection is often combined with the epithelial form of xerosis conjunctivæ bulbi.

The prognosis is always good; with the improvement of the hemeralopia the xerosis also disappears.

Examining his regiment of soldiers, containing about 500 men, the author found one morning 24 cases of xerosis conjunctivæ with hemeralopia. After two weeks' duration this epidemic subsided. G.

SINUSES AND NASAL CAVITY.

A CASE OF ACUTE RETROBULBAR NEURITIS PROBABLY DUE TO SINUSITIS.—ZENTMAYER, W., Philadelphia (*N. Y. Med. Journ.*, Jan. 27, 1906), thinks the evidence of a direct causal relation between sinus affections and ocular disease insufficient, and that most of the cases reported, including his own, prove at most a coexistence of the two. A case like that of Phihl, in which a relapsing empyema of the antrum was invariably accompanied by the symptoms of a retro-bulbar neuritis, of course leaves no doubt. This disease is not common, and its symptoms are few and not typical. Pain is an early and important feature. It is usually severe, referred to the orbit or to the side of the head, there is commonly pain on pressure of the eyeball back into the orbit and on movements of the eye. Of 350 cases collected by Gunn, 18 were probably due to disease of the sphenoid sinus. In 11 both nerves were involved, and in 16 there was great loss of sight.

In an early stage the greatly impaired vision without ophthalmoscopic changes, and nervous hyperesthesia due to pain, arouse suspicion of hysteric amblyopia, but there is no reaction of the iris and malingering can not be proven. Lapersonne found 20 per cent. of all cases of empyema of the accessory sinuses were complicated by inflammation of the orbital contents. P. H. F.

SOME OPHTHALMOLOGIC PHASES OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.—POSEY, W. C., Philadelphia (*Journal of Eye, Ear and Throat Diseases*, vol. x, No. 2), has noticed that ocular symptoms, of a type not generally recognized as characteristic, frequently precede the manifestations of sinus disease. "The possibility of the nose or accessory cavities being a cause of eye disease is dismissed in most instances by the surgeon upon the negation of the patient having ever suffered from nasal catarrh, or by the failure of one, or at best, two rhinologic examinations to reveal the presence of pus in the nares." An active sinusitis may exist without nasal discharge, either through retention or from the simple congestive nature of the inflammation, and may cause no subjective nasal disturbances whatsoever. While many forms of eye disease may be occasioned by sinus affections, Posey has arranged his cases into the following groups:

1. Moderate stasis in the circulation of the optic nerve, as indicated by slight ophthalmoscopic changes and by an interference with vision. In two cases there was a retrobulbar inflammation of the nerve, due to sphenoid sinusitis, in which not only the light sense was diminished, but scotomata were produced. Ophthalmoscopic examination was at first negative, but later pronounced pallor of the temporal half of the disc manifested itself.

2. Conditions occasioned by an involvement of the fifth nerve. Pain, or the sensation of a foreign body in the eye: herpetic keratitis.

3. Edema of the lids. This may be the early and only ocular symptom of accessory sinus disease.

4. Paresis and actual palsy of the extraocular muscles. The true origin of the paralysis in these cases is often overlooked, and many of them attributed to rheumatism or catching cold, both of these conditions being attended at times by symptoms similar to those provoked by sinusitis.

5. Pseudo-migraine ophthalmoplegique. With variations in the drainage conditions of the affected sinus the symptoms may be irregular or intermittent, so that in cases where one or more branches of the oculomotor nerve have been paralyzed the above rare condition may be simulated. The symptoms are those of ophthalmoplegia more or less complete, associated with violent migraine, nausea, vomiting and fever, lasting a variable period, and recurring at long or short intervals.

6. Pseudo-lacrimal abscess. This is generally due to a frontal empyema, pointing unusually low down, as a consequence of an anomalous distribution of the cells in that bone; to an empyema of the lacrimal division of the ethmoidal cells, which are at times unusually developed, or, finally, to the burrowing of pus from an abscess of the orbit. Although these accumulations generally point above or below the sac, the differential diagnosis may be extremely difficult, especially in the cases described by Peters. Here there is an ectasia of the sac due to blocking of the exits by pressure of pus in adjacent cavities. P. H. F.

SYMPATHETIC OPHTHALMITIS.

Sympathetic Ophthalmitis After Panophthalmitis.—Würdemann, H. V., Milwaukee (*Ophthalmic Record*, November, 1905). The author thinks the one case reported by Ahlstrom and the two cases reported by Schirmer of sympathetic ophthalmitis following panophthalmitis in a measure controvert the contention that panophthalmitis does not always cause a contractive tissue formation that stops the pus germs from migrating from the injured eye to its fellow, or does not always cause such an intense local inflammatory action in the original eye as to cut off the nerve connection. After abstracting the reports of Ahlstrom and Schirmer's cases, Würdemann reports a case of his own that occurred thirteen years ago. It was a case of cataract in each eye. The eye operated upon became cataractous from an injury sustained six months before. The operation was uneventful, and was performed under the usual aseptic precautions. Notwithstanding, in forty-eight hours the wound was discharging pus in large quantities, and the eye went from bad to worse, ending in panophthalmitis. The patient left the hospital without permission and did not return until a month later, when he was found to have active sympathetic ophthalmitis going on in the fellow-eye, which ended in total blindness. M. B.

Two Cases of Sympathetic Ophthalmia from Ancient Trauma.—Dehogues, J. L., Havana (*Revista de Medicina y Cirurgia de la Habana.* Ref. in *Archivos de Oftalmologia*, December, 1905). In the first case an atrophic eye, which had tolerated a foreign body for twenty years, became inflamed, and ciliary irritation, photophobia and slight papillitis and visual reduction (1/3 to ¼) appeared in the other eye. In the second case sympathetic iridocyclitis with reduced vision dependent on trauma twenty-four years previous. Enucleation brought relief in each instance. The globe in the first case was found to contain pus. H. M. F.

Spindle-Shaped Enlargement of the Blind Spot Associated with Congestion of the Optic Disc.—Ramsay, A. Maitland, Glasgow (*Ophthalmic Review*, January, 1906). "The observations here described deal with certain changes in the shape of the blind spot which were first noticed during the determination of the visual field of a patient suffering from well-marked sympathetic irritation. The spot assumed a spindle shape, which in this case disappeared after the enucleation of the exciter. Normally, the blind spot of Mariotte is an oblong space with rounded corners.

lying a little to the right or to the left of the fixation point. The rounding of the angles varies in different individuals, and the vertical length has to the horizontal breadth the proportion of six to four. About one-third of the whole space is above a horizontal line drawn through the fixation point. A narrow zone of relative or transitional amblyopia for white surrounds the area of absolute blindness, and outside this is the absolute scotoma for blue, then that for yellow, then that for red, and last of all that for green, the order being the same as that which obtains at the peripheral part of the visual field, and there seeming to be a zone of transitional amblyopia for all the colors. The absolute blind area for green is relatively very large, and its inner boundary almost reaches the point of central fixation. In the five cases now recorded the enlargement was altogether vertical, and there was no change in the horizontal width.

The five cases recorded presented sympathetic irritation and the histories of these examples makes it seem highly probable that under such circumstances the spindle-shaped enlargement of the blind spot may furnish an important and valuable signal of the approach of sympathetic inflammation. It is often very difficult to determine whether the optic disc is or is not congested by ophthalmoscopic examination alone, especially when there is no healthy fundus for comparison; and in these cases the spindle-shaped enlargement of the blind spot is a valuable sign, denoting active congestion of the optic disc—the shape being determined by increased size and turgescence in the superior and inferior branches of the retinal artery and vein. "If, then, in a case of infected wound, or of degenerative changes, in one eye, its fellow began to give trouble, no matter how slight, and careful examination showed a congested disc with characteristic enlargement of the blind spot, the sign would, in our opinion, go far to determine the question of the immediate enucleation of the exciter."

The presence of a low degree of transitory myopia in four of the five cases described and which disappeared when the injured eye was removed, seemed to afford confirmation of the diagnosis of impending sympathetic inflammation; in some of these cases this was probably due to spasm; but in one case when it persisted under atropin, it could be explained only by supposing that the congestive changes brought about an altered state of the media whereby the refractive index was increased. C. H. M.

The Treatment of Sympathetic Ophthalmia with Salicylate of Soda.—Lindahl (*Wiener Medizinische Wochenschrift*, Oct. 7, 1905). In a series of 13 cases of sympathetic ophthalmia, 6 were treated with salicylate of soda, 6 with mercury, and 1 with both of these drugs. The effect of the mercurial treatment was rather uncertain, but the salicylate of soda treatment was favorable. The latter drug in doses of from 4 to 6 grains per diem acts more rapidly and is safer than the treatment by inunction; it does not, however, prevent relapses and is not effectual from the standpoint of prophylaxis, but it has a favorable effect upon the iridocyclitis in this disease. J. G.

TOXICOLOGY.

METHYL ALCOHOL AMBLYOPIA, WITH REFERENCE TO OPTIC NERVE.—NAGEL, C. S., San Francisco (*Journ. Am. Med. Assn.*, Nov. 18, 1905), believes that wood-alcohol amblyopia sets in at first through a defective blood supply consequent on disturbances in the general circulation, expressed in weak pulse, slow respiration, sweating, coma, etc. This inference is strengthened by those cases in which improvement of vision took place after the first severe attack of blindness, to be again followed by loss of sight and optic-nerve atrophy. Pohl has shown that the maximum of formic acid, the toxic agent in these cases, does not appear in the urine until three or four days after, the poison having a cumulative effect, which accounts for the second attack of grave amblyopia, the first being due to ischemia of the retina. In view of the bad prognosis, the author recommends iridectomy or at least keratomy (sic) to lower the intraocular pressure. Nagel's reasons for believing that we have to deal with the development of simple glaucoma are as follows: The great similarity in both visual fields, the nasal defect being marked. Glaucomatous cupping of discs. Insensibility of the cornea. Indication of halos around the nerve head. History of pain. The absence of plus tension does not necessarily exclude simple glaucoma; the cupping, too, might take place under the influence of normal pressure, with an unusually weak or inflamed optic nerve. Schweigger states that such a condition could be the result of any atrophic disease of the optic nerve when there was previously a physiologic cup. P. H. F.

A CASE OF ACCIDENTAL ESERIN POISONING, WITH RECOVERY.—STEVENS, B. F., El Paso (*Journ. Am. Med. Association*, Nov. 25.), reports the case of a woman, aged 28, who by a mistake in telephoning, received a hypodermic injection of 2 grains of eserin sulphate instead of gr. 1/50. Within two or three minutes after taking the eserin she turned purple, and her bowels moved profusely and involuntarily. Respirations became shallow, the trachea, pharynx and larynx filled with mucus, and the pulse became imperceptible.

even over the carotids. She remained unconscious for about 12 hours. The following drugs were given hypodermically in divided doses: Atropin, gr. 1/10; nitroglycerin, gr. 1/30; strychnin, gr. 1/10; brandy, a dram, and aromatic sulphuric acid, a dram. Twelve hundred c.c. of normal salt solution was also given subcutaneously around the breasts. She was surrounded with hot water bottles and given plenty of fresh air, the tongue being drawn forward with vulsellum forceps. She was catheterized every half-hour. Recovery was probably due to the fact that she had received a small dose of atropin and morphin a short time before the eserin was taken. Potter says that immense doses of eserin may be taken without harmful effect if preceded by even minute doses of atropin, which is the physiologic antidote. The salt solution, no doubt, was of great benefit, because eserin is eliminated almost entirely through the urine. P. H. F.

EXPERIMENTAL INVESTIGATIONS ON THE IMPORTANCE OF THE CHEMICAL QUALITIES OF BASIC ANILIN COLORS FOR THEIR INJURIOUS INFLUENCE ON THE CONJUNCTIVA.—VOGT, ALFRED, first assistant (From the eye clinic of Prof. C. Mellinger in the University of Basel. *Zeitschr. fuer Aug.*, 1906, xv, p. 58). The experiments, which were made on white rabbits, led to the following conclusions: An experimental comparison of basic anilin colors and their underlying anilin derivatives shows that their injurious influence on the conjunctiva is owing to the phenyl rest in combination with the amido group. It is enhanced by increasing basicity of the combination, but even more so by introduction of alkalies (the groups CH_3, C_2, H_3, etc., the radicals of monovalent alcohols) into the amido group. The mineral acid of a basic color does not influence its toxicity, but renders it more soluble in water and thereby facilitates its action. The nocuous influence is not dependent on the augmentation of benzol nuclei contained in the molecule. Since only the basic anilin colors are injurious, a substitution of acid salts is recommended for manufacturing inks and pencils. C. Z.

A CASE OF ALMOST FATAL POISONING BY HOMATROPIN INSTILLED INTO THE EYES.—HOTZ, F. C., Chicago (*Ophthalmic Record,* December, 1905). In this case of a woman, aged 22 years, one drop of a 2 per cent. sol. homatropin was instilled into each eye and repeated in fifteen minutes and was repeated again in the left eye, making five drops altogether which were instilled. The patient left the office with face somewhat flushed. While on the way home had severe headache, much excited and nauseated. This continued all night, and about daylight she became unconscious, with pulse 150, weak and fluttering, respirations five a minute. Energetic treatment finally brought her around all right. She had retention of urine for two days. M. B.

Eye Diseases from Auto-intoxication.—Elschnig, Wien (*Klin. Mon. fuer Aug.*, 1905, ii, p. 417). By way of excluding other morbid causes and, most important, by the therapeutic results, autointoxication must be assumed as the cause of many and grave eye diseases. Elschnig studied these conditions within the last 10 years on his private patients and reports aphoristically on his observations, after giving a synopsis over the various forms of autointoxication, as intestinal or histogenous autotoxicoses, e. g., diabetes, gout, uremia, carcinoma, chlorosis, gravidity, puerperal state, lactation, etc., or insufficient physiologic excretion of toxins from diseases of certain organs (thyroid gland, adrenal capsules, liver, hypophysis). The most important symptom of gastrointestinal autointoxication is the presence of abnormal organic substances in the urine, e. g., indican. Chiefly the nervous apparatus of the eye, the corneosclera and uvea react to the influence of gastrointestinal autointoxication. Thus in paralysis of the interior or exterior ocular muscles, optic neuritis may occur, with symptoms similar to those in ptomain intoxications (botalism, intoxications by cheese, etc.), or functional disturbances, as neuralgia, scintillating scotoma. In none of the cases of typically relapsing retinitis, iridocyclitis and iritis, excepting a case of gonorrhoic iritis, Elschnig could find another etiology, and his diagnosis was corroborated by the treatment. Eight cases of recurrent iritis are given in detail. Elschnig considers a connection of relapsing hordeola with gastrointestinal disturbances beyond doubt. An appropriate diet and disinfection of the intestinal canal with carbonate of guaiacol proved very effectual in these cases. The literature is extensively utilized.

C. Z.

TRACHOMA.

Trachoma in Children.—Bradley. C. Cole. New York (*Medical Record*. Feb. 3, 1906). The writer reviews briefly the recent epidemic of conjunctival affections in New York, the prevalence of which was very markedly reduced by the energetic work of the Board of Health. He does not believe in blue stone for the treatment of trachoma, having had the suspicion that the extreme cicatrization of the lids seen in old chronic cases might be due to the long-continued applications of this remedy. He prefers using bichlorid of mercury combined with massage. as advocated by Keissing in 1890. For the past 10 years he has used this solution in

1:100 or 1 per cent. strength: the applications were made every second day, and every part of the everted lid was touched. As an after-effect there is produced an eschar resembling that produced by silver nitrate, which can be separated by the second day. "I have found that applications three times weekly, with flushings of the lids twice daily with a solution of bichlorid, 1:6000, gives the very best of results. When the case is not so severe, occasional touching with the bichlorid solution, 1 per cent., combined with the daily use of silver nitrate, gr. viii to the ounce, and the bichlorid flushings give excellent results."

He has found 5 per cent. ointment of copper citrate of use in cases showing pannus, though he has had little experience with this remedy; it is painless and can be used by the patient at home; others have reported excellent results with this copper salt.

When performing the operation of expression he dispenses with general anesthesia and uses powdered cocain locally, massaging it into the exposed conjunctiva by means of a shell cataract spoon; 2 grains suffice for both eyes; the lids are closed for 4 minutes and then a small quantity is again massaged in; 6 minutes later the lids are ready for operation.

After emptying the follicles by expression, a sharp curette is used to remove shreds of denuded membrane and to pick out individual follicles that failed to rupture. After and during the operation the lids are flushed with formaldehyd, 1:2000. "Borated vaselin is then placed between the lids and a compress moistened with the formaldehyd solution is bandaged on. This is removed after six hours, and the eyes are for the next three days flushed frequently with formaldehyd solution, 1:3000. After the third day silver nitrate, 1 per cent., or some other silver solution is used daily if there is much discharge, and frequent flushing with 1:6000 bichlorid of mercury solution are practiced until the case is discharged. It is quite possible to discharge cases in which the follicles have been plentiful within two weeks, while under local treatment three to four months would be necessary to effect a cure."

Regarding the claim that the use of cocain causes desquamation of the corneal epithelium, the writer says that after the operation the cornea will often be found steamy and sometimes quite opaque in appearance, but that a cotton-tipped probe dipped in the formaldehyd solution will remove this gelatinous deposit and the cornea will be found to have its normal luster; he has never seen corneal ulceration in the 600 cases operated on by him. He prefers formaldehyd solution during and after the operation to bichlorid solution, since he finds less reaction and much less discharge after its use. C. H. M.

Trachoma as Treated by Dr. Herman Kuhnt of Koenigsberg.—Brawley, Frank E., Chicago (*Ophthalmic Record*, October, 1905). The author spent some time in the trachoma district of East Prussia, where this disease is so prevalent as to be under government supervision. Physicians in all parts of this district are given special instruction by Professor Kuhnt in the diagnosis and treatment of trachoma. All people found suffering from trachoma are obliged to take treatment and, if necessary, go to the hospital at Koenigsberg. The entire expense of treatment, including railway expenses and board are borne by the government. Kuhnt feels that he has "spoken the last word on the subject of trachoma treatment." The treatment is medicinal, mechanical and operative. The medicinal treatment consists of 2 per cent. silver nitrate, copper and alum stick, etc., and is used in the acute condition and for after-treatment. The mechanical treatment consists of expression with Kuhnt's forceps under local anesthesia. Kuhnt employs three operative methods. The first is the simple excision of the diseased portion of the retrotarsal folds, and is used when there is no great involvement of the tarsus. Where both the tarsus and retrotarsal folds are extensively involved he performs his so-called combined excision operation, by which the diseased retrotarsal folds and all of the tarsus except a narrow strip at the lid margin are removed. His remaining procedure is used in cases where the disease seems to be confined to the tarsus and consists in the subconjunctival removal of the tarsus. The author saw no bad results follow the operative treatment. Kuhnt claims to cure these cases in from one to three months. M. B.

On the Relation of Mueller's Bacillus to the Etiology of Trachoma.—Luerssen, A. (From the hygienic institute of Prof. R. Pfeiffer of the University of Koenigsberg. *Zeitschrift fuer Aug.*, 1905, xiv, p. 443). Mueller's conclusions and theories have not only been not supported by other investigators, but have been opposed, since his findings could not be verified. Within the last 9 months Luerssen examined bacteriologically the secretions of cases of trachoma of different intensities at the granulosis department of the eye clinic of Professor Kuhnt at Koenigsberg, and found only few Mueller's bacilli, in one case many. But he also discovered them in cases of coryza with catarrhal conjunctivitis. Their occurrence bore no relation to the amount of secretion.

Luerssen inoculated his own eyes with cultures of Mueller's bacillus and gives the clinical report of the result, controlled by Prof. Kuhnt. It caused a slight conjunctivitis, and the presence of Mueller's bacillus was proved in the conjunctival and nasal secretions as late as the sixth day. On the eighth day no bacilli could be ascertained and the conjunctivitis had subsided. No symptoms of trachoma ever set in. The same observations were made after inoculating two other persons.

Luerssen concludes that in a small number of cases of trachoma Mueller's bacillus occurs, as well as in some other conjunctival diseases, but nothing shows that it is the morbid agent of trachoma. On the contrary, the negative results of inoculation speak directly against Mueller's assumption. C. Z.

ON THE FREQUENCY OF TRACHOMA IN JAPAN.—KUWABARA, TOSCHINA, Nishikunisaki, Bungo, Japan (*Klin. Mon. fuer Aug.*, 1905, ii, p. 459), examined his whole village, i. e., 1,301 inhabitants and 347 families. Three hundred and twelve (91 per cent.) of the families were diseased, perhaps even more. He gives a detailed statistical report as to extent, age (boys from 1 to 10 and girls from 1 to 20 years were frequently affected), geographical distribution, number of diseased school children in comparison to citizens, degrees of the disease, relation of trachoma between parents, children and grandchildren, to occupation and wealth, pupils of higher and lower schools. Finally he answers the question, Why trachoma has a predilection for his country, in the following manner: 1. The inhabitants belong to the poor classes. 2. All members of a family generally sleep in the same room, and during summer even in a narrow mosquito net. 3. Some use the same towel, the same wash basin and the same water. 4. Some have little knowledge of hygiene and the contagious character of trachoma. 5. Some work in dusty atmosphere. 6. No attention is paid to slight trachoma nor to severe forms, if they do not cause considerable suffering.

C. Z.

THE PATHOLOGY OF TRACHOMA.—GOLDZIEHER, W. (*Medizinische Blätter*, Oct. 26, 1905.) The etiology and pathology of trachoma is still quite obscure, notwithstanding the great advances made in medicine and particularly in the study of diseases of the eye. We positively know that the infection of trachoma is transmitted by the secretion; without secretion there is no infection. The specific microbe of trachoma still remains to be discovered. History teaches us that the first great epidemics of trachoma up to the thirtieth years of the nineteenth century appeared under the clinical picture of acute gonorrheal ophthalmia. Greeff, Saemish, Axenfeld and other authors deny absolutely the fact that after a pure gonorrheal infection trachoma could develop with characteristic scar formation and corneal vascularization; if such cases do occur, they are to be considered mixed infections.

The author is opposed to this theory.

Although we can not at present consider blenorrhea and trachoma as identical diseases, there are cases in which chronic inflammation of the eyelids following blenorrhea could not be distinguished from genuine cases of trachoma.

The name of granular infection instead of trachoma is erroneous, as there are a number of cases where no granules exist at all, but a lymphoid infiltration in the shape of puffed-up folds.

The importance of granules is overestimated, and many an inflammation of the lids, of a comparatively innocent nature, is considered trachoma. J. G.

TUMORS.

Pterygium.—Shastid, Thomas Hall, A.M., M.D., LL.B., Harrisburg, Ill. (*Ophthalmic Record,* October, 1905). A new explanation is given in the causation and treatment of pterygium. The normal eye has a depression, running in a vertical direction, lying just to the nasal side of the cornea. A foreign body lodged under the upper lid will follow the path of least resistance as the lid moves it over the eyeball; hence it will follow the course of this groove or depression. The epithelium will accordingly be denuded from the nasal and corneal side of this groove. Inflammatory reaction will cause swelling and possible union of the tissues over this groove, a canal thereby being left underneath. This canal serves as a receptacle for colonies of germs, which keep up constant inflammatory reaction and vascular dilatation. The author claims that a true pterygium can not exist without this canal, but that a false pterygium can. He, therefore, proposes to destroy this canal with carbolic acid on wooden probes to arrest the progress of the growth, and for cosmetic purposes the head of the pterygium is shaved from the cornea and then cut off at its neck or a little to the nasal side of it. M. B.

Diseases of the Caruncle.—Bock, Emil, Laibach (*Centralbl. fuer Aug.,* 1905, p. 321). 1. Sarcoma melanodes, in a healthy man, aged 24, in form of a small grayish-brown tumor on the apex of the enlarged caruncle. Excision. The caruncle was infiltrated with round cells, the sebaceous glands around the tumor were enlarged.

also the sudoriferous glands, containing hyalin, party high, partly flattened cells. 2. Cases of granuloma caused by foreign bodies.

C. Z.

A Case of Subconjunctival Osteoma.—Trousseau (*Annales d'Oculistique,* November, 1905). Trousseau reports the case of a mechanic, 26 years old, with a tumor the size of a cherry stone in the free margin of the upper lid. The skin moved over it freely, but it adhered closely to the lid margin. The patient said that a little tumor had been removed from this region when he was 2 months old and that the present growth had commenced six months before he applied for treatment. Trousseau thought that a congenital tumor had been incompletely removed and had recurred, as dermoids sometimes do. It developed in the subconjunctival connective tissue.

The microscope showed compact osseous tissue with Haversian canals and osteoblasts. G. C. H.

Casuistics of Intraocular Tumors.—Wagner, P., Frankfurt a. M. (From the eye clinic of Prof. E. Fuchs, Wien. *Zeitschrift fuer Aug.,* 1905, xiv, p. 533), reports the clinical history and anatomic structure of a peripapillar sarcoma of the chorioid in a woman, aged 51, which had been under observation a few months after the diagnosis had been ascertained very early. At the first examination of the patient the retina around the disc appeared gray, like graphite, in an extent of 1 to 1½ papillary diameters outward, 4 inward, ½ upward and 1 to ½ downward. V. = ½. Enucleation 5 months later after cocain infiltration.

The optic nerve divided the tumor into a larger nasal and a smaller temporal half and the papilla contained also 2 small roundish symmetrical tumors. Generally the sarcomata of the posterior pole extend to the disc later. It was a polymorphous-celled melanosarcoma which had scarcely progressed beyond the borders of the chorioid, so that a radical cure was to be expected.

Three other anatomically similar cases from the collection of Professor Fuchs are described, which also illustrate the slow growth of these tumors at first, and 3 cases of diffuse sarcoma of the chorioid. In all, the whole chorioid was infiltrated with sarcoma cells without formation of a tumor. It seems that the circumpapillar sarcomata also have the tendency to expand within the surface and surround the disc before formation of nodules. The anatomical and histologic conditions are illustrated on 2 plates. C. Z.

Contribution to the Study of Symmetrical Lymphomatose Pseudoleukemic Tumors of the Lacrimal and Salivary Glands.—Van Duyse (*Archives d'Ophtalmologie,* December, 1905). Under the denomination of a symmetrical affection of the lacrimal and salivary glands, Mikulicz has described a morbid entity not belonging in the class of any recognized disease. This symmetrical hyperplasia of chronic character, painless and without fever, commences in the lacrimal glands and either remains confined to them or extends to some or all of the salivary glands. There were no changes in the spleen or in the blood in the cases that he studied, and he considered the etiology to be in some unknown exogenous infectious processes penetrated by the conjunctiva. The neoplastic tissue had the structure of lymphomas. This lymphomatose hyperplasia of the lacrimal and salivary glands is similar to pseudoleukemia, or Hodgkin's disease, with the same histologic conditions. When it can not be referred to acute or chronic infections or to true tumors, it is a pseudoleukemic affection of the lymphatic tissue included in these glands. According to Pincus, little physiologic lymphatic foci exist in all organs, and a lymphomatose, leukemic or pseudoleukemic tumor may be developed anywhere from preexisting lymphatic tissue.

Van Duyse reports the following case: A woodcutter, 67 years of age, applied to the ophthalmological clinic on account of tumors which appeared beneath the upper eyelids. He soon returned to his home and died suddenly a few weeks later. He had noticed the commencement of the tumor on the left side a year before and on the right some six weeks later, and about this time a similar tumor appeared under the angle of the right maxillary. The upper eyelids were pushed forward by vaguely nodulated neoplastic masses jutting out below the upper margins of the orbits and causing a moderate ptosis. The tumors were symmetrical, of an oval form and immovable. On the left side a smooth red tumor covered by congested conjunctiva projected below the palpebral margin. On raising the lid it was noted that the outer half of the cul-de-sac was pushed forward by a tumor flattened by pressure and pediculated. It reached the margin of the cornea and could be separated from the ball as far as the cul-de-sac. In front of each ear there was a tumor the size of half a billiard ball on the left side and smaller on the right. There were symmetrical tumors in the region of the submaxillary glands on both sides. Two symmetrical pyriform tumors, covered by mucous membrane, occupied the anterior part of the floor of the buccal cavity, raising the end of the tongue and slightly disturbing articulation. A similar tumor occupied the vault of the palate on the left side, and behind this, separated by a transverse groove, was another on the anterior segment of the velum. There was no sign of a tumor in the nose or on the tonsils. Radiography showed a decided hypertrophy of the mediastinal ganglia, and an enlargement of the sphere was noted. Examination of the blood excluded leukemia, and there was neither sugar nor albumin in the urine.

The only treatment was four applications of x-rays, at two-day intervals, to the right orbital tumor. This tumor had diminished at the time of the fourth application and had disappeared when the postmortem was made, eight days later.

Death occurred suddenly during an access of dyspnea without the patient having been confined to bed. Mediastinal lymphomatose ganglionic masses as large as the fist were found surrounding and compressing the lower part of the trachea, and the upper part of the pericardium was transformed into a thick membrane confused with this mass.

The paper ends with the following résumé: 1. This case of symmetrical leukemic development of the lacrimal and salivary glands has a decided resemblance to the syndrome of Mikulicz.

2. At the stage of development in which it was studied the hypertrophy of the peripheric ganglia, the extensive opaque zone in the mediastinum and the enlargement of the spleen showed a general lymphomatosis, the examination of the blood excluding leukemia.

3. The disappearance of the lymphoma of one of the lacrimal glands is directly attributable to the use of the x-rays.

4. It is probable that the isolated lymphomatose hyperplasia of the lacrimal and salivary glands is the early stage of cases with hyperplasia of the peripheric glands and of the spleen. If it is true, according to Van Baunn, that these cases can not be distinctly separated, the morbid entity invented by Mikulicz can not be maintained. G. C. H.

A CASE OF METASTATIC ADENOCARCINOMA OF THE CILIARY BODY.—PAUL, Breslau (*Arch. f. Augenheilk.*, liii, H. ii). The patient, a man, 66 years of age, had had a cataract removed from the left eye in October, 1904, securing a V. = 6/8. At that time R. E. was healthy. Six weeks later the eye was red and had pressure sensation. This increased, and one month later a reddish-white growth appeared in the lower inner quadrant of the iris extending into the anterior chamber and onto the posterior surface of the iris. The tumor grew rapidly and, hemorrhages occurring, secondary glaucoma developed and the eye was removed. Physical examination showed no positive symptoms of carcinoma, but there was resistance to palpation in the region of the stomach and there was blood in the stools. The author points out that in most of the recorded cases of carcinoma metastasis took place through the posterior ciliary vessels, whereas in his own case (as in a few others) it was by way of an anterior ciliary vessel. He states that he was certain of its secondary, because of its glandular nature, there being within the eye no glandular structure. He says that the views of Treacher Collins and of Snell have not been confirmed. In a postscript the author states that the patient died, and the autopsy revealed extensive carcinoma of the stomach in part ulcerated, with liver metastasis. W. Z.

Retro-ocular Tumor.—Cross, Richardson, England (*Brit. Med. Journ.*, Dec. 23, 1905; report of the December meeting of the Ophth. Soc. of the United Kingdom). A description is given of seven cases operated on for retro-ocular tumor—five by the Krönlein method. The writer describes the various conditions in which such an exploratory operation would be of the greatest benefit; it assisted the diagnosis and left the patient no worse for its performance; was briefly explained.

Case 1 was a fibroadenoma of the lacrimal gland, but it left behind ptosis and partial paralysis of the ocular muscles, with inversion of the eyeball; an unsatisfactory result. Case 2 was a hydatid cyst removed from the optic nerve. This was removed with good result. Case 3 was a fibro-fatty tumor of the eyeball which passed backward into the orbit. It was removed successfully. Case 4 was a sarcoma of the upper lid, which caused proptosis. The eyeball had to be removed with the tumor, as it happened, although there seemed a reasonable possibility that the eye might be saved before the operation was undertaken. The patient made a good recovery. Case 5 was a similar growth under the upper lid, in which the orbit was eviscerated without any attempt having been made to save the eye. Case 6 was a large growth at the inner and lower part of the orbit, which was removed by an incision along the inner and lower walls of the orbit. Case 7 was one of severe proptosis, with retro-ocular growth treated by Krönlein's method. A sarcomatous mass had destroyed the upper wall of the orbit and was in contact with the brain. The antrum was also involved. The wound healed up and left good vision and good use of the eyeball; even the internal rectus was not damaged.

Mr. Cross also showed another case in which he considered an exploratory operation desirable. He was greatly impressed with the utility of the operation, and urged that it should be done in any case in which there was doubt as to the nature of the condition of the orbit. C. H. M.

METASTATIC TUMOR OF THE CHORIOID IN SUPPOSED HODGKIN'S DISEASE.—V. MICHEL, J., Berlin (*Zeitschrift fuer Aug.*, 1905, xiv, p. 421), describes a papilliferous carcinoma of glandular structure of the chorioid in a man, aged 42, who had the rare affection of primary carcinoma of the mediastinum which terminated fatally a few months after enucleation. The case is remarkable, since, so far, metastatic carcinoma of the uvea was, in the majority of cases, observed in primary carcinoma of the mamma, rarely in primary carcinoma of the stomach, liver, pleura and prostata. Swelling of the supraclavicular glands, two years previously, had misled to the diagnosis of Hodgkin's disease. The eye affection commenced with sudden failure of sight, severe pain and exophthalmus. At the first examination by Professor Deutschmann the retina at the lateral side was found covering one-half of the disc, with steep borders. The tumor was visible through a rupture of the retina. The microscopic structure is given in detail. C. Z.

MELANOMA OF THE IRIS.—ANARGYROS, E., Athens, translated from the German edition, vol. xlvi, by Dr. Percy Fridenberg, New York (*Archives of Ophthalmology,* November, 1905), gives the clinical history and microscopic examination of a case of melanoma of the iris occurring in a patient, aged 62, who has been admitted to the hospital for cataract. As the globe had to be enucleated later on account of panophthalmitis, the author was enabled to make thorough macro- and microscopic examinations of this benign growth. The cells of the melanoma originated in the retinal pigment cells of the posterior surface of the iris. There was a direct extension of Bruch's membrane into the pigment cells on the edge of the tumor.

According to Grynfeltt and Hermfordt. Bruch's membrane is the modified extremity of the anterior retinal cell layer, so that the melanoma was developed from the anterior layer of the retinal layer and from the pigment cells of the iris stroma originating in that layer. The tumor was partially inclosed in a connective-tissue capsule lying on the lens capsule.

The author gives the site of election for the development of such melanomata as, first, the pupilary margin, where both pigment layers so frequently present a thickening, and, second, the region of the peripheral margin of the sphincter. W. R. M.

Etiology of Pigmentous Sarcoma of the Chorioid.—Hirschberg, J., Berlin (*Journ. Am. Med. Assn.*, November 25), thinks that the mystery as to the cause of malignant neoplasms may be partially explained by the fact that different forms are caused by different agencies. In 1882 Hirschberg published two cases in which monolateral congenital pigmentation predisposed to the development of melanotic sarcoma of the chorioid. In another group of cases a congenital pigment spot in the iris was the cause of a pigmentous sarcoma of the same coat. A third observation is that of a circumscribed pigment spot in the iris, followed by melanosarcoma of the ciliary body of the same eye. These facts are very striking and agree with other observations in pathology, for instance, that congenital pigment nevi of the cutis, as life advances, tend to be converted into melanotic tumors, and, with the theory of Cohnheim, that congenital peculiarities of cell groups or persistencies of embryonal germs constitute the real predisposition to later development of malignant tumors. P. H. F.

A Case of Melanosarcoma of the Chorioid.—Taylor, L. H., Wilkesbarre (*Journ. Am. Med. Asso.*, November 25), says the occasion is rather rare to see and to diagnose a case of pigmented sarcoma of the chorioid and afterward to confirm the diagnosis by microscopic examination. In the author's case a diagnosis of probable retinal detachment of intraocular growth in the quiet stage or of possible enormous hemorrhage was made. as there was no myopia and no plus tension. After the eye had been enucleated for hemorrhagic glaucoma the presence of a new growth was established by microscopic examination. The patient died of sarcoma of the liver less than two years after removal of the eye, although there was no local recurrence. Hirschberg has compiled statistics of 68 cases of sarcoma of the uveal tract; of these 63 were chorioidal. Sixty-six enucleations were performed. There were no deaths from the primary operation. Local recurrence was observed only once, in which perforation had taken place before enucleation. In two out of six cases in which puncture was made previous to operation for diagnostic purposes, there was a recurrence at the site of the puncture. Death from metastasis took place in 16 cases, in 12 of these within two years. Of 41 cases one died from local recurrence, 17 from metastasis, and 23 remained healthy. Of 47 cases examined anatomically, 35 were melanotic, 9 slightly pigmented and 2 leucosarcomatous. Metastasis after more than four years is exceptional.

P. H. F.

Peripapillar Sarcoma.—Moissonnier, Tours (*Annales d'Oculistique,* October, 1905). Moissonnier reports a case of peripapillar sarcoma and says that its tendency is to develop backward into the orbit through the infiltrated sclerotic or by way of the optic nerve, either following the vaginal sheaths or passing by the cribriform lamina and the intrafascicular partitions. The earlier the surgical intervention the better the chance of a cure.

G. C. H.

Neoplasms and Pseudoplasms Developed in Atrophied Eyeballs.—Terrien and Coutela (*Archives d'Ophtalmologie,* November, 1905). The relations that exist between ocular neoplasms and phthisis of the globe are of two kinds. Either the neoplasm is primitive and the atrophy appears secondarily in the course of its evolution or the atrophy is primitive and the neoplasms develop in a more or less old stump.

Phthisis of the globe is not very rare in the course of glioma. Graefe supposed a necrosis of the neoplasm and consecutive intraocular suppuration; and Leber speaks of the tendency to absorption of its masses in fatty degeneration. Pseudogliomas end in destruction of the globe, not by perforation, but by atrophy, and this normal evolution toward regression may have been confounded, before the histologic diagnosis of tumors of the eye, with the temporary regression, which is admitted, in the course of true glioma. May there not be in these cases a simple arrest of the objective symptoms in consequence of the perforation of the sclerotic in the region of the posterior pole and the development of the tumor behind the eye?

In the course of sarcoma of the chorioid, atrophy of the globe is less frequent, but is well known—but if the reality of these cases is indisputable the same can not be said of their pathogeny. It is possible that the neighboring tissues may react and transform themselves into a fibrous capsule which incloses the neoplasm and tends to protect the threatened organism, but such cases of atrophy of the globe are excessively rare.

According to Graefe, in the course of a sarcoma an attack of glaucoma, or alteration of the nerves that supply the cornea, leads to corneal ulceration and perforation, followed by suppuration of the eye and atrophy of the globe, while Fuchs and other authorities believe that phthisis of the globe in sarcoma is due to a secondary iridochorioiditis.

As to the cases in which a neoplasm develops in an atrophied globe, there are very few instances recorded of atrophy preceding the appearance of glioma. It is not so rare in sarcoma, though even here the cases are exceptional and have been much discussed.

The authors report the case of a child, 3½ years old, in which a leucosarcoma occurred in an atrophied eye three years after its destruction by purulent ophthalmia, and refer to a similar case reported by Lapersonne, in which the growth was a sarcoma.

Some authors doubt the origin of sarcoma in an atrophied eye and believe that the germ of sarcoma pre-exists, perhaps in the form a pigmentary nevus of the iris, and continues to evolute after a traumatism or inflammatory attack.

Others consider it a simple coincidence, as there seems to be no reason why a sarcoma should not originate in an atrophied eye as well as in a sound one.

Chronic inflammation, of which the atrophied eye has been or is the seat, appears in certain rare cases to act a part in favoring the appearance of a sarcoma, but they are only secondary causes and not direct pathogenic agents. These latter remain unknown.

G. C. H.

UVEAL TRACT.

Acute Nontraumatic Uveitis.—Young, H. B., M.D., Burlington, Iowa (*The Ophthalmic Record,* November, 1905). Within two years he has seen three persons afflicted with an unusual form of uveitis of a recurring nature. No constitutional cause could be found. The onset: Photophobia, equatorial congestion, myosis, darting pains, sensations of foreign body and slight tenderness. Tension normal, iris bright and media clear. The course: Within 48 hours the picture changed. Pain worse; circumcorneal "rosy zone"; the fully dilated pupil begun to contract; vision misty because of vitreous haze; no punctate spots in cornea. These symptoms increased gradually in magnitude until the picture was that of a severe attack of iridocyclitis of the cerous form. The salicylates in large doses had no beneficial effect. No progress was made until inunctions of mercury were begun with iodid of potassium by the mouth. Recovery from each attack was complete, with normal vision resulting. M. B.

Ectropion of the Uveal Tract and of the Margin of the Pupil.—Gallenge, C. (*Archivio di Ottalmologia,* xii, Fasc. 9-12, 1905), analyzes the various kinds of ectropion and gives illustrations to accompany his description of the anatomic-pathologic findings in cases of inflammatory ectropion of the margin of the pupil. In two of his cases there had been proliferating retinitis; in five others, secondary or primary glaucoma. In six of these cases the ectropion appeared in its typical form, that is, not accompanied by exudate in the pupil, while there were always old or recent deposits on the anterior surface of the iris. In another case, the primary lesion was a sarcoma of the chorioid, and here the ectropion was the result of proliferation of the pigment elements, forming a conical protuberance on the margin of the pupil with exudation in the field of the pupil and proliferation on the posterior aspect of the iris. Common to both forms was the obliteration of the spaces of Fontana and of the lumen of the vessels and curving over outward of the sphincter and of the margin of the pupil. Deutschmann believes that the ectropion is due to contraction of the parts due to the organized exudate on its under side. Fuchs, on the other hand, ascribes it to atrophy of the stroma of the iris. The author thinks that each of these factors may co-operate to produce the eversion, aided, besides, by the active proliferation of the cells in the iridic portion of the retina. C. A. W.

COMMONER FORMS OF IRIDO-CYCLITIS AND THEIR TREATMENT.—CLARK, FRED T., Westfield, Mass .(*Albany Med. Annals,* January, 1906). The special characteristics of this disease when due to syphilis, which causes at least half of all cases, are the formation of nodules at the pupilary or ciliary border of the iris. These may be masked by diffuse swelling of the pupilary margin. All forms show a tendency to relapse, particularly the rheumatic cases. Atrophy of the iris may develop after severe or repeated attacks. Exudates and adhesions are the most frequent and important sequelæ. Cataract may develop because of disturbed nutrition of the lens. Shrinkage of fibrinous exudates may cause detachment of the retina and atrophy of the globe. In every case of irido-cyclitis we must combat the local symptoms and search for and remove the underlying cause. In even moderately severe cases the patient should be put to bed in a darkened room, with light but nutritious diet, the bowels kept loose, preferably with salines, and the urinary secretion stimulated. Atropin should be used vigorously in from 1 per cent. to 5 per cent. solutions. It may be aided by cocain and adrenalin or replaced by scopolamin or duboisin. Moist hot compresses give relief from pain and hasten the resorptive process. Five or six leeches or the artificial leech to the temple are a valuable aid to the atropin. The production of profuse diaphoresis every second or third day, using pilocarpin hypodermically or sodium salicylate internally, with hot drinks and hot air or steam baths, is of great value. Mercurials in the form of inunctions should be used daily even in cases of doubtful etiology, and should be kept up until the inflammatory symptoms disappear or ptyalism develops. The severe rheumatic form does well under large doses of salicylates. P. H. F.

VISION AND COLOR PERCEPTION.

Light Sense in Strabismus.—Mackay, D. Matheson, England (*Brit. Med. Journ.*, Dec. 23, 1905, report of December meeting of Ophthal. Soc. of the United Kingdom). This paper was based on an examination of 1,245 cases of strabismus or amblyopic patients. No corresponding observations had been published, and his own investigations had been undertaken in order to discover if there were any defects in the light minimum, or the light difference, of the affected eye which could account for the strabismus or the amblyopia. The photometer employed was a new one and was described as having several advantages over those previously used. The cases were arranged in six groups—convergent strabismus with amblyopia (66 cases), convergent strabismus without amblyopia (30 cases), alternate convergent strabismus with double amblyopia (2 cases), divergent strabismus with amblyopia (9 cases), divergent strabismus without amblyopia (4 cases), and amblyopia without strabismus (14 cases). In all these cases both the light minimum and the light difference were estimated separately, and the results in the more important groups showed that a large majority of the affected eyes had normal light sense (77 to 90 per cent. as to the light minimum and 75 to 80 per cent. as to the light difference). The lesser groups had the same tendency, but on account of the small number of cases their results were not insisted on. His general conclusion was that the condition of the light sense was not responsible for the squint or for the amblyopia. C. H. M.

Recovery of Vision in a Non-squinting Amblyopic Eye Following Injury to Its Fellow.—Emerson, Linn, Orange, N. J. (*The Ophthalmic Record*, November, 1905). Examination of eyes for glasses revealed O. D. V. = 20/50, O. S. V. = 20/20. Nothing was found to account for the poor vision of right eye. Three months later the left eye sustained a penetrating wound of cornea, which greatly damaged vision for a time. In one month's time the vision of O. D. = 20/20 and the injured eye was 20/40.

M. B.

Colored Vision After Cataract Extraction.—Elliot, R. H., M.D., B.S., F.R.C.S., Major, Indian Medical Service (*The Ophthalmoscope*, January, 1906). A large number of patients operated on in Madras for cataract are in the habit of complaining that everything they see appears colored after operation. Rarely a patient complains of seeing red or green, but every week one hears from a number of those operated on: "I see everything as if it were blue."

During 100 days he operated on 250 cases, all of whom were discharged from the hospital within five days after the operation; hence the observations on chromotopsia were made during this time. One hundred and ten did not have colored vision, while 140 had colored vision, 130 of which saw blue. The following table shows fully the conditions:

Saw white throughout	110
Saw blue throughout	16
Began with blue and ended in white	73
Began with white and ended in blue	10
Began and ended in white and saw blue in the middle	19
Began and ended with blue and saw white in the middle	11
Began and ended with blue and saw black in the middle	1
Saw red throughout	1
Began with red and ended in white	2
Began with red and ended in blue	1
Saw red, blue and white in turns	3
Saw yellow and green	3
Total	250

An analysis of ages in tables is made, showing a tendency to cyanopsis, especially between the ages of 40 and 50. M. B.

How a Light Should Be Placed for Reading.—Cravath, J. R., and Lansingh, V. R. (*The Electrical World,* New York, January 6). The general lighting of small living rooms and parlors, together with the location of lights for reading in such rooms, is discussed, with criticism of special cases. The writers note at the outset that the general lighting of a small living room and the provision for reading lights are so closely connected that they must necessarily be considered together. They write:

"The reading light is the one that is likely to be used constantly and has so much to do with the comfort and eyesight of members of the family that it needs earnest consideration. There are three common ways of obtaining a reading light. One way is to illuminate the whole room so brightly that reading is easy in any part of it. This is usually undesirable for two reasons: One is that the eye is likely to tire more quickly in a room so brightly illuminated in all corners than it would if it had an opportunity to rest by looking from the lighter to the darker parts of the room occasionally. The cost of lighting a room so brilliantly as this makes it out of the question in the majority of rooms. We will, therefore, leave out of consideration this method of securing a reading light and consider the second and third methods. The second method is to use a lamp placed near the reader and fitted with a globe or reflector which will concentrate nearly all the light on the book or paper. If we do this, the reading lamp is likely to be of little value in the general lighting of the room and we will have to add other lights besides the reading lamp if the greater part of the room is not to be in comparative darkness. The third method, which is the one usually to be preferred where the greatest economy is an object, is to use the same light both for reading and for the general lighting of the room by equipping the reading light with a globe or reflector which will concentrate a considerable portion of its light within the area in which it is desired to read and at the same time allow enough light to radiate in all directions to give fairly good illumination over the rest of the room."

Poor arrangement of reading lamp.

The popular impression that a portable table lamp is better adapted to reading than a lamp on a chandelier or bracket is regarded by the authors as a misconception, such table lamps being merely an inheritance from the days of the candle and oil lamps. They say:

"With electric light, usually much more satisfactory results can be obtained with a properly equipped reading light on or suspended from the chandelier or on a bracket on one of the side walls. The reason for this is that it is impossible with a table lamp to secure a reflector which will throw as large a proportion of the light where it is needed for reading purposes as can be obtained from the proper reflectors on chandeliers and brackets. Most of the electric portable stand lamps throw the greater part of the light down on the table around the base of the lamp, so that the readers sitting around the table get only a small percentage of the light. . . . If the port-

Effective arrangement for reading lamp.

able stand lamp is used on a library table where the readers place their books on the table each side of the lamp its use is permissible, but such is not the usual condition.

"There is also considerable misconception as to the comparative distance from the reader of a lamp located six feet above the floor on a chandelier as against a lamp located on a table. The average person who has never measured these distances is under the impression that the lamp on the reading table is much nearer. As a matter of fact, the distances are nearly the same. There is really for the majority of cases only about one thing to be said in favor of an electric table lamp for reading as against a properly equipped lamp on a chandelier or bracket. This is that with the table lamp it is not as likely that a reader will get the regular reflection commonly known as the 'glare' from a page of white paper because the light comes so much from one side. In reading underneath a lamp on a chandelier or bracket the reader must turn the page at such an angle that he does not receive this glare from the paper. This is easily done, but many people undoubtedly suffer from this without knowing what is the trouble or taking pains to find out. Since this glare of regular reflection is likely to be more pronounced with electric light than with kerosene lamps, it is probable that this is responsible for the preference that some people have for oil reading lamps, even though electric light is available in the rest of the house."

In advocating the use of reading lights placed on chandeliers and brackets rather than table lamps, the authors disclaim a desire to advise trying to read with chandeliers arranged for the general illumination of the room. Chandeliers to be used for reading lights should be specially equipped for the purpose. Through courtesy of *The Electrical World,* we reproduce herewith some of the illustrations given by the authors to make their ideas clear.—(Abstracted from *The Literary Digest*, Jan. 27, 1906). H. V. W.

VITREOUS.

SCINTILLATING SCOTOMA.—V. REUSS (*Wiener Medizinische Wochenschrift,* Oct. 7, 1905). The author gives some observations on scintillating scotoma that he has made on himself. The attacks occurred when large objects were being handled in dark places and occurred most frequently in the morning. The latter fact speaks very strongly against the theory of physical or mental fatigue as the causation of the attacks. There appeared dark lines, which, so to speak, stood out from an illuminated greenish or yellow background; the borders of these lines were very brilliant, giving the erroneous impression that the lines themselves were illuminated; the background was quiescent; on one side of this background there was an absolutely negative scotoma. When this background was looked at with colored light it appeared in the complementary colors; if a small gas flame was looked at through a blue glass the arch appeared yellow; through a green glass purple and through a red glass bluish green. J. G.

Studies in Pathologic Conditions of the Vitreous.—Greeff, Berlin (*Arch. f. Augenheilk.*, liii, H. 2), after considering the normal structure of the vitreous, states that he agrees with Cirincione in his statement that "the importance of the region of the ciliary body as the matrix of the vitreous humor is confirmed by the disastrous results on the integrity of the eyeball following lesions of this region." The normal greater fluidity of the center of the vitreous increases with age. These changes may also occur in youth. Liquefaction of the vitreous is a sequel of various conditions, but is constant after chronic cyclitis and union of the ciliary processes; not only this, but the albuminous element is increased. Greeff believes this to be due to alterations in the epithelium of the orbicularis ciliaris, permitting the albumin of the blood to penetrate. Various conditions follow this, particularly that known as fibrillary degeneration. He says in relation to this that as rarely as we have a regeneration of the vitreous fibrillæ, so rarely do we have either as the result of inflammation or other degenition, an hypertrophy, a thickening or an increase of the same. There is no such thing as fibrillary degeneration of the vitreous. The only change the fibrillæ of the vitreous undergo is their solution. He confirms the existence of both posterior and anterior separation of the vitreous, but considers it an artifact. He considers, with Cirincione, that true regeneration of the vitreous does not occur. He has never seen karyokinetic figures either in anatomic studies of clinical cases or experimentally in rabbits. The following steps follow the withdrawal of part of the vitreous: First, a provisional transudation, followed after a time by the appearance of a rich network of fibers plainly visible on the surface of the retina where they rest on a broad base, or they come from the depths of the retinal layers and, indeed, from the midst of the Müller supporting fibers. The second act is the formation of vitreous cells. They are found at the equator or at the ciliary region in more or less dense collections. They are rare in the posterior part of the eye. At times they project from the surface of the retina and are independent of the vessels. W. Z.

Book Reviews.

Melanosarcoma as the Only Form of Sarcoma of the Uveal Tract (Das Melanosarkom als Einzige Sarkomform des Uvealtraktus).—SCHIECK, FRANZ, DR. An anatomo-pathologic consideration. 35 illustrations in text, and 18 figures in 3 plates. 131 pp., paper. J. F. Bergmann, Wiesbaden. 1906.

This most interesting brochure seeks to prove by a complete anatomo-pathologic report of twenty-four cases of uveal tumors, examined microscopically by the author, and a review of all fully reported cases in the literature of leuco- and angio-sarcomas, that all sarcomas of the uveal tract are more or less pigmented and should be classed as melano-sarcomas.

From the microscopic standpoint, we must agree with the author, for even in the white sarcomas chromatophores are to be found. We must, however, side with LaGrange—whose descriptions and differentiations the author attacks— that there is a difference in the prognosis, as regards recurrence and life, to be made from the macroscopic as well as microscopic characters of these growths. Those containing embryonal tissue mostly are probably more malignant and subject to recurrence, and especially those that are so deeply pigmented as to be deemed melanotic.

The author states that from the critical examination of the many cases of melanosarcoma which have been wrongly described under other names, he finds no evidence that other than pigmented growths arise in the uvea. All such could be described as melanosarcoma. The result of his studies is the following theorem:

So far as we know only melano-sarcoma arises in the uveal tract, and that the existence of other forms of primary sarcoma remains to be demonstrated. H. V. WÜRDEMANN.

The Accessory Sinuses of the Nose and Their Relation to Neighboring Parts.—KILLIAN, GUSTAV, DR. Translated by PATTERSON, D. R., M.D., M.R.C.P. Illustrated by 15 colored plates. W. T. Keener & Co., Chicago. Gustav Fischer, Jena. 1904. **Price, $7.50.**

Of all the atlases of the head showing the accessory sinuses of the nose, Killian's is the most practical from the surgical standpoint, as the dissections from which the plates were prepared were made with the view of exposing the sinuses in a way to elucidate the various operations that are performed upon them.

I saw the German edition some time ago and found the plates most helpful for my own operations. The drawings are colored, made sufficiently diagrammatic that the salient features are readily grasped by their inspection. A special explanatory transparent sheet overlaps each plate so the drawings are not disfigured by lines and words. This English edition will prove of much use to workers in rhinology, otology and ophthalmology, and to the general physician and surgeon. H. V. WÜRDEMANN.

The Ophthalmoscope and How to Use It.—THORINGTON, JAMES, A.M., M.D. With colored illustrations, descriptions and treatment of the principal diseases of the fundus. 73 illustrations—12 colored plates. P. Blakiston's Son & Co., Philadelphia. 1906. Price $2.50.

A lucid exposition of practical ophthalmoscopy, with sufficient of anatomy, optics and the commoner affections of the internal ocular structures to give the beginner a clear idea of the diagnoses to be made by the ophthalmoscope, not alone as regards normal conditions and disease, but also the refraction. The book is written for the student and general practitioner, and really fills a needed want, for other works on this subject are too elaborate or too compact for their purposes.

"In the preparation of the manuscript and the arrangement of these pages and chapters, the writer has planned to be systematic and practical, so that starting with the consideration of the ophthalmoscope and its optic principles, as also the optic principles and anatomy of the eye, the reader is brought to a knowledge of the normal eye and has a colored sketch presented of a healthy eye ground as a guide for comparative descriptions. Finally, the reader is given a comparison of the normal with the pathologic, so that when he sees a certain condition in the eye ground he will know at once whether the appearance indicates health or an anomaly or disease, and the structure or structures involved. However, to enhance the value of the work, the writer has selected for his descriptions and illustrations those diseases of the eye ground which appeal to the general practitioner in every-day practice. The sketches in color were made by a noted artist and under the writer's personal supervision, from individual patients in his own practice. These sketches, made by the aid of artificial light, should be studied under similar conditions (see page 111). The subject of prognosis and treatment of the various diseases described has not been exhausted, but has been sufficiently touched upon to give the reader a proper understanding of the subject without making a work of this character unnecessarily large."

The author's style is clear and concise, and the work is recommended to beginners in this most technical and difficult branch of the healing art. H. V. WÜRDEMANN.

Dictionary of Ophthalmic Terms.—CROSKEY, JOHN WELSH, M.D. Published by Henry B. Croskey & Co., Philadelphia. 1905.

This is a small pronouncing dictionary which may be useful to the beginner in ophthalmology. H. V. WÜRDEMANN.

The Changes Produced by Inflammation of the Conjunctiva (the Hunterian Lectures, R.C.S. 1905).—MAYOU, M. S., F.R.C.S. London, John Bale, Sons & Danielsson, Ltd. 1905. Octavo, pp. 179.

The author has recorded the results of over three years' work on the subject of the changes produced by inflammation of the conjunctiva; he puts forward some views which may serve as a basis of further research.

Lecture I commences with a short account of the developmental and morphologic origin of the conjunctiva, the conditions at birth and the changes which occur during the first weeks of life, these having important bearings on the study of the formation of the lymphoid tissue and of the changes produced by chronic inflammation; the latter are then described, including xerosis, which is divided into (1) the primary or epithelial form and (2) the secondary form, also known as essential shrinking of the conjunctiva.

Lecture II takes up the subject of traumatic conjunctivitis with special reference to the changes in the cellular elements as the result of wounds, implantation cysts or dermoids of the conjunctiva, lymphoid tissue, follicular formation, lymphoma and contagious conjunctivitis due to micro-organisms, the last comprising gonorrheal, Koch-Weeks', and diplobacillary conjunctivitis.

Lecture III commences with a consideration of trachoma, which is defined as "a specific infective disease of the subepithelial lymphoid tissue of the conjunctiva, characterized by the formation of follicles and by infiltration, which go on to subsequent cicatrization and partial obliteration of the conjunctival sac"; the subdivision includes a full description of the histology of this disease. The differential diagnosis of follicular conjunctivitis and trachoma is next presented both clinically and microscopically. Then follow the histology of the bulbar conjunctiva in trachoma, the histology of pannus, and the histology of the various forms of trachoma. Finally the arrangement of sanatoria is briefly considered and the local treatment of trachoma is more fully discussed. The author speaks very highly of the use of x-rays for the cure of trachoma and the improvement of pannus, and he describes fully the method of employment of this agent. Phlyctenula and vernal catarrh are also considered.

The book is exceedingly interesting, contains much that is original and will well repay perusal. It is excellently printed on coated paper, and contains many illustrations, including five full-page plates in colors. CHARLES H. MAY.

The Surgical Assistant.—Brickner, Walter, M., B.S., M.D., New York. With 123 original illustrations. The International Journal of Surgery Company, New York, 1905. 12mo, pp. 363.

This volume occupies a unique position in the field of surgical literature. It deals with those details connected with every operative procedure which are left to assistants. We all know how difficult it is to obtain skillful and satisfactory aid in operations, especially outside of a hospital. Many of the younger men have obtained more or less suitable training for such work while serving as hospital internes; but every recent graduate in medicine is not lucky enough to obtain a hospital position.

The book is, therefore, bound to be exceedingly useful to many practitioners—to the hospital interne early in his service, to the medical man who assists at operations or who undertakes the after-treatment, and to the nurse or doctor who is called upon to prepare a room for operation. The author states in his preface that the object of the work is "to present clearly and concisely the many important details of method, the valuable little 'wrinkles,' which, familiar enough to the surgeon and to the trained assistant, have not before been gathered together in print"; this he has accomplished in an admirable manner.

A valuable portion of the book is the appendix, in which is given the preliminary preparation and routine after-treatment of operative cases, including the preparation of the various surgical dressings and solutions.

Chapter XII treats of ophthalmic operations; the duties of the assistant in cataract extraction, iridectomy, tenotomy and enucleation are well given, although Figure 60, while illustrating the relative positions of operator and assistant correctly, is faulty in that portion which shows the method of illumination in cataract extraction.

Altogether, the book can be highly recommended, and the ophthalmic surgeon will find a great deal of interest and value in its pages. Charles H. May.

Supplement to "Klinische Monatsblaetter fuer Augenheilkunde."—Edited by Prof. Th. Axenfeld, Freiburg, and Prof. W. Uhthoff, Breslau. 326 pp., with 2 plates and 50 illustrations in the text. Stuttgart. Ferdinand Enke. 1905.

This supplement is not a regular part of the periodical. We therefore call the attention of our readers and the subscribers to the *Klin. Mon. f. Aug.* not to overlook this exceedingly interesting and valuable collection of very exhaustive essays, which would not receive justice in a short review, so that we mention only the titles:

A. Groenouw, Breslau: "Visual Disturbances and Legislature of Invalid Insurance." W. Stock, Freiburg: "Ulcus corneæ internum in syphilitic keratitis parenchymatosa." W. Plitt, Freiburg: "Tuberculosis of the lacrimal glands." S. Shibal, Osaka, Japan: "Etiology of dacryocystitis in tuberculosis of the surrounding parts, and tuberculous dacryocystitis." R. Agricola, Freiburg: "On congenital epithelial xerosis of the conjunctiva." E. B. Demaria, Buenos Ayres: "Endogenous mixed infection of the eye with tuberculosis and pseudodiphtheria bacilli. Panophthalmitis tuberculosa, at the same time a contribution to experimental cataract." C. Hamburger, Berlin: "On the theory of upright vision." G. Lenz, Breslau: "Contributions to hemianopia." One hundred and forty-two pages are occupied by Julius von Siklossy, Budapest, "On the visual acuity of the human eye," a most elaborate study, carried out with the assistance of the Royal Hungarian Academy of Sciences.

The great efforts of the editors and publisher, to give the best to their readers, are evinced, not only by the issue of this instructive supplement, but also by the modern and enlarged form in which the *Klinische Monatsblaetter fuer Augenheilkunde* appears from January, 1906, on.

C. ZIMMERMANN.

Encyclopedia of Ophthalmology (Encyklopædie der Augenheilkunde).—SCHWARZ, PROF. DR. O., Leipzig. (Edited with 54 colaborators by O. Schwarz.) Nos. 11, 12 and 13. Leipzig, F. C. W. Vogel. 1905. Subscription price of each number 2 M. $0.50.

As mentioned in our review of the first seven numbers, the Encyclopedia of Ophthalmology will form a volume of Vogel's Medical Special Encyclopedias, of which, so far, those of otology, cutaneous and venereal diseases, obstetrics and gynecology, surgery and hygiene have appeared. Its purpose is to be, in lexicographic form, a practical handbook of quick ready reference on all subjects of ophthalmology, special as well as in relation to other branches of medicine, for the general practitioner and the oculist. The subject-matter is distributed into 2,000 separate articles, and besides 1,000 subjects refer to the former. According to their practical importance, some parts are represented more fully, e. g., the operations, therapeutic and special pharmacologic themata, and also physiologic questions, especially physiologic optics, are very clearly discussed. Whenever it is necessary for better understanding, illustrations are added and short bibliographies of the most important literature. The collaborators are from the ranks of the most competent and renowned ophthalmologists, and their names are found below their respective articles.

Nos. 9 and 10 were reviewed in OPHTHALMOLOGY, vol. i, p. 185. The present numbers contain, to mention only a few, excellent articles, in alphabetical order as far as and including the letter N, on colobomata, anatomy and diseases of the sclera, pediculi, an essay on lepra of the eye by Lyder Borthen, headache with references to other articles as asthenopia, etc., light and perception of light, elaborate discourses on the lids, their diseases and operations on them, with illustrations, on the crystalline lens, lupus, lymphatic apparatus of the eye, magnet operation, massage, ocular affections in meningitis, micropia, disturbances of motility, multiple sclerosis, miosis, mydriasis, myopia, secondary cataract, relations of nose and accessory cavities to eye affections, adrenalin preparations, ocular nerves, a thorough chapter on microscopic anatomy, physiology and diseases of the retina, optic neuritis, etc.

Like the preceding, they give ample proof how well the designed plan has been carried out. Especial credit is also due to the publisher for the handsome getting up of the work with regard to paper, print and arrangement. We anxiously hope that this eminently useful work will soon be brought to a close. C. ZIMMERMANN.

The Sexes of Animals.—MOEBIUS, P. J., PROF., Leipzig. Halle a. S., Carl Marhold. 1905. M. 1. $0.25.

This forms a part of a collection of essays, in which the well-known author speaks on the differences between both sexes. Moebius intends to call the attention to and to lay down the principles to which such investigations lead, since the questions as to the general endowment of the male with superior size and beauty have not been sufficiently discussed, and does this in a very fascinating form.

C. ZIMMERMANN.

Slightly Abnormal Children.—WEYGANDT, W., PROF., Wuerzburg, Halle a. S., Carl Marhold. 1905. M. 1. $0.25.

Besides idiots and imbeciles, there is a great number of children which require medical attention on account of abnormal psychical conditions. Weygandt summarizes the following etiologic factors: 1, Transient exogenous influences, as environment, neglect, opposition to education, bad example, diseases, alcohol; 2, formes frustes of idiocy and imbecility; 3, arrest of development from constitutional diseases; 4, slight epileptic, hysteric and neurasthenic predisposition, tendencies to grave psychoses. The most different psychical functions may be involved, and may be combined with nervous affections or other organic defects, as strabismus and nystagmus.

Weygandt distinguishes slightly epileptic children of hysterical or neurasthenic predisposition, debiles, i. e., inferior as to intellect and emotions, feeble in intellect and perception, but of predominating emotional life, phantastic, irritable, despondent and morally defective children. For treatment, the author recommends various kinds of schools: For the feeble-minded "auxiliary" schools, for the intellectually slightly abnormal children repetition classes, for the morally neglected and defective, education under medical superintendence, while the epileptics require individually different methods of care.

The author deserves thanks for the discussion of this important chapter. C. ZIMMERMANN.

Text-Book of Human Physiology.—VON BUNGE, G., PROF., Basel. 2 vols., with 79 illustrations in the text and 2 plates. Second revised and improved edition. Leipzig. F. C. W. Vogel. 1905. 28 M. $7.00.

This is a delightful book. Although written for the student in form of lectures, it is a most welcome gift for the physician, be he general practitioner or specialist, who wishes to remain familiar with the progress of physiology, the scientific foundation of the entire medicine. Leaving aside incoherent facts and tiresome descriptions of methods and apparatus, the author considers only topics, ripe for connected discussions, presupposing the necessary knowledge in allied fields, as anatomy, etc., with the object in view that his work be actually read. However, to enable the reader to indulge in a closer study of the originals and form his own judgment, ample references will be found in the footnotes.

Von Bunge commences with the physiology of the sensory organs, "the alpha and omega of all natural science, the fundament and the finishing stones." Besides the regular subject-matter of physiology, we have special chapters on sleep, hypnotism, hibernation, heredity, regeneration, idealism and mechanism, conservation of energy, origin of muscular force, diabetes, infection and fever. The author, endowed with very broad ideas, accomplished his task, to represent physiology on a large scale, in a most brilliant form with regard to technic and style. Paper and print are of superior quality. C. ZIMMERMANN.

Studies on the Cortex of the Human Brain.—RAMÓN Y CAJAL, S., Madrid. Translated from Spanish into German by DR. J. BRESLER, Lublinitz. No. 5. Description of comparative structure and histogenesis of the cortex of the brain. Anatomo-physiological thoughts on the brain. Structure of the nerve cells of the brain. Index of subjects and authors to Nos. 1 to 5. IV, 149 pp., with 7 illustrations and the picture of the author. Leipzig, Johann Ambrosius Barth. 1906. M. 6. $1.50.

Our reviews of the preceding four numbers on the visual, motor, acoustic and olfactory cortices in man and mammals, will be found in the *Annals of Ophthalmology*, 1902, p. 610, and 1903, p. 773. The present instalment completes the monumental work of Cajal, and contains the subjects given in the above titles. The author points out a certain conformity in the architecture of the cortical layers in men and the gyrencephalic mammals. The anatomic simplification commences with the rodents, becomes more noticeable in the lower mammals and most in birds, reptiles and batrachii. This applies not only to the number of differentiated centers and regions and of the layers of each sphere, but especially to the morphology of the neurons, which the farther down in the animal series, gradually lose their differences and processes and reduce their associations with the nerve fibers, from which they receive currents. Two anatomic characteristics, however, are always present, thus demonstrating their phylogenetic and dynamic importance: The radial direction of the neurons, whose exterior pole constantly emits a peripheral pencil, and, under the pia, the existence of a plexiform stratum, in which the fascicles of the pyramids and the affluent nerve fibers meet.

Cajal assumes that the higher functions (memory, conception, association, consciousness, etc.) depend as well on the texture and chemical constitution of the protoplasm, as on the quality of the irritation conveyed to it. The form may be considered as the canal for the activity of the nerves, and thus the majority of the nervous processes would have for their purpose to multiply the associations and to impart to the nerve functions solidarity and continuity.

Under histogenesis, the different phases of development of the cortex from the upper wall of the primary cerebral vesicle, in rodents and the human fetus, are discussed, viz., the morphologic differentiation of the nerve cells, neuroblasts, appearance of dendrites, collaterals, centripetal nerve fibers. The parallelism between phylogenetic and ontogenetic evolutions is illustrated by the reproduction of the final condition of the neurons of invertebrates in the phase of neuroblasts in mammals.

Then the anatomic theories on the brain of Flechsig, von Monakow and of the author are given. Cajal's theory includes the following points: 1, At least tripartition of the cerebral centers (e. g., the three centers of speech, Broca's, first temporal and angular gyri); 2, existence of centrifugal projection fibers in all these. 3, bilateral centers of perception, unilateral, primary and secondary centers of memory. 4, projection of sensory centers in the centers of optical and tactile memory; 5, physiologic and teleologic postulates; coalescence of perceptions (referring to crossed paths), congruent and continuous projection of peripheral sensory surfaces (retina, skin) in the cortex, economy in space and conducting protoplasm.

For the explanation of perfecting certain psychical acts by exercise, originality and variety of talents, logic memory and of disturbances of association (amnesia, mental inactivity, imbecility and insanity), the author assumes, besides the reinforcement of previously formed organic paths, new formation of others through ramification and progressive growth of dendrites and terminal nerve fibers.

In Chapter IV we find a synopsis on the microscopic anatomy of the neuron of the pyramids (psychical neuron). According to Cajal's investigations, the innumerable neurofibrillæ, composing the skeleton of the pyramidal cells, show only intracellular anastomoses, never intercellular between the neurons, as asserted by the opponents of the neuron theory. The number, form and volume of the neurofibrillæ vary enormously under certain physiologic and pathologic conditions. In the state of hyperactivity they become attenuated and multiply (exhausted neurons), while at rest or under the influence of cold, hibernation or of the toxins of hydrophobia, they are arranged in form of a few colossal, absolutely homogeneous, interwoven bands.

Cajal's work contains the most perfect demonstration of the cerebral cortex so far presented, and the vast abundance of new facts and ideas the celebrated author sets forth renders its careful study imperative for all who wish to become thoroughly acquainted with the delicate structure of the brain. Print and the very numerous illustrations are excellent, and the well-executed picture of Cajal will be especially welcome. C. ZIMMERMANN.

Squint: Its Causes, Pathology and Treatment. WORTH, CLAUD, F.R.C.S., London. Second Edition. Published by P. Blakiston's Son & Co. Philadelphia. Price, $2.00.

That a second edition of this most excellent treatise on Squint has been demanded, speaks more eloquently than any words. The rational manner in which the subject is treated, the simple methods of treatment outlined and the conclusive results obtained by the author with his method of treatment, has practically revolutionized the manner of conducting cases of strabismus. There have been no changes in the methods of treatment in this second edition. A few additions to the text, of an explanatory nature, have been made and numerous references added.

The book has been translated into German by Dr. E. H. Oppenheimer.

There is no doubt that this work is the most reasonable and comprehensive of any monograph yet written on the subject, and no up-to-date oculist can afford to be without it.

N. M. BLACK.

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Original Articles.

OCULAR INJURIES FROM GLASS AND STONE.*

By William M. Sweet, M.D.
PHILADELPHIA.

Glass and stone offer so little resistance to the passage of the Roentgen rays that a general belief exists that it is impossible to demonstrate, by means of radiographs, the presence of either of these substances in the eyeball in instances in which penetration is suspected. Apart from the difficulty of shadowing a particle of either glass or stone situated in the eyeball, the tendency of glass to splinter and of stone to break into small pieces further increase the difficulty of localization and make it impossible for the *x*-ray operator, even if successful in shadowing one or more particles, to positively state that the eye does not contain other fragments too small to be shown by the radiographs.

Notwithstanding the difficulties of the work of localizing glass and stone in the eyeball, clinical experience and the results of experiments prove that in many instances even small particles of these substances can be shown on the plate if the situation of the body permits the shadow to be cast free from that of the denser portions of the orbital bones.

GLASS IN THE EYEBALL.

Mr. Mackenzie Davidson was the first to prove that a piece of glass in the eyeball could be shown by the *x*-rays.[1] The case is reported by Mr. Nettleship, who saw the young man in January, 1899, six months after he was injured in the eye by the explosion of a chemical retort flask. The eye was subsequently enucleated, and the findings of the radiographs verified.

Several years ago I presented to the Section a brief note of injury from a piece of glass which was located in the ciliary region by the *x*-rays and successfully removed by forceps. The detailed history of the case is as follows:

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*Read before the Section on Ophthalmology, College of Physicians of Philadelphia, Nov. 21, 1905.

[1] Trans. British Ophth. Soc., vol. xix.

A. C. M., a locomotive engineer, was struck in the left eye on March 1, 1900, by a particle of glass from an exploded lubricating gauge. He entered a local hospital and was under treatment for two months for edema of the lids and conjunctiva. I first saw the man six months after the injury, at which time there was still edema of the eyelids and some photophobia. The cornea showed a linear scar about 7 mm. in length, extending downward and outward from a point 4 mm. to the temporal side of the center. A small scar could be seen in the iris immediately back of the corneal injury. The lens was absorbed. No view of the fundus could be obtained, owing to the haze of the vitreous.

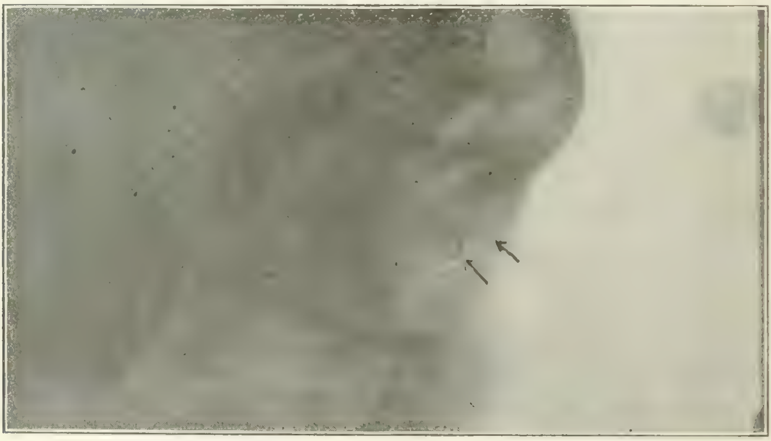

Fig. 1.—Stone in eyeball. Shadow of two large pieces.

Several radiographs were made, and a faint shadow secured on the plates of a foreign body which was localized close to the ciliary body at its lower temporal portion. Under ether an iridectomy was made through an incision at the lower outer corneoscleral junction, and a pair of forceps passed to the spot indicated by the radiographs. After several unsuccessful attempts, a mass of exudate was withdrawn, in which was found a particle of glass, 4 x 2 mm. A small quantity of vitreous was lost, which was replaced by a warm saline solution.

Little reaction followed the operation, the corneal wound healed rapidly, and the man left the hospital a week later. Since that time the eye has not given him any trouble, but the globe is slightly shrunken, and the vision equals light perception.

STONE IN THE EYEBALL.

The following case of injury from stone was referred to me by Dr. J. Edw. Nickel, of Glen Moore, Pa.:

G. F., aged 50, was injured in the left eye on Oct. 9, 1905, while watching workmen break stone with a large sledge. He felt something strike the eye, but was not positive whether it was a fragment from the hammer or a piece of the stone. Dr. Nickel examined the eye a few hours after the injury, and removed several particles of dirt and fine stone from a wound in the cornea.

I saw the man 24 hours after the injury, and found a ragged wound of the cornea extending from near the lower inner limbus to within 2 mm. of the corneal center. The lens was opaque, with cortical particles in the wound, and the anterior chamber was abolished. Oblique illumination failed to show any foreign substance in the wound or in the eyeball. Light projection good.

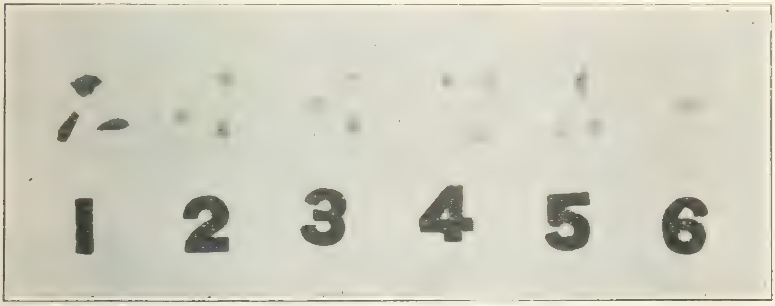

Fig. 2.—Skiagraph of various varieties of glass. 1. Lead glass. 2. Piece of lens. 3. Piece of chemical flask. 4. Piece of soda-water bottle. 5. Druggist's green bottle. 6. Locomotive gauge glass. (One-half inch board between particles and plate. Exposure, fifteen seconds.)

Several radiographs were made, each of which showed two faint, slightly rounded shadows, one about 2.5 mm. and the other about 4 mm. in diameter (Fig. 1). On two of the plates was also seen a minute shadow less than 1 mm. in diameter, which was thought to be the shadow of a third body. Localization of the two largest bodies placed them both in the region of the lens, one at the extreme lower portion of the capsule or in the posterior chamber, and the other to the nasal side of the corneal summit and slightly below the horizontal plane. The extent of the corneal wound, however, pointed to a much larger mass of stone as the cause of injury than was shown by the radiographs, and it is probable that the particles lodged in the eyeball broke off from a large piece of stone at the time of impact.

The man entered the Jefferson Medical College Hospital, the eye was cocainized, the corneal wound enlarged and the nucleus and soft cortex of the lens expressed. In the pupillary space could then be seen, close to the edge of the iris, a small yellowish white body, which on removal with the lens scoop proved to be a piece of stone. It corresponded in size and shape to the smaller of the two larger shadows on the radiographs. Believing that this must have been the body situated at the nasal side of the lens, the scoop was inserted behind the iris and below, to the spot corresponding to the localization of the denser shadow, and a small piece of stone the size of a pin head was removed. The scoop was again inserted in the same direction, and a larger piece of stone removed.

No marked reaction followed the operation. The corneal wound closed on the third day, and the man returned to his home a week later. His physician advises me that the eye has become quiet, but capsular opacities in the pupil reduces vision to light perception.

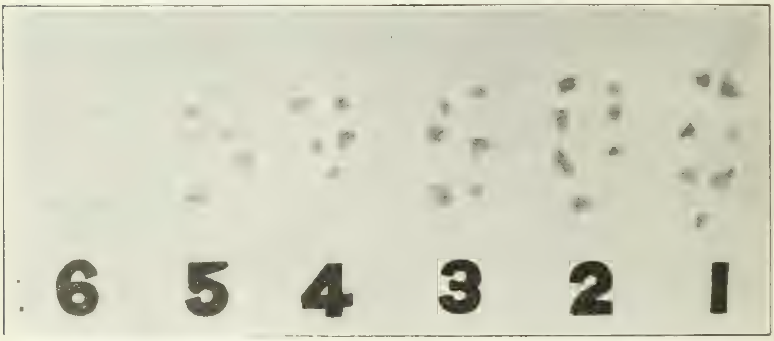

Fig. 3.—Skiagraph of various particles. 1. Building stone. 2. Granite. 3. Pieces of cement pavement. 4. White marble. 5. Glass. 6. Anthracite coal. (One-half inch board between particles and plate. Exposure, ten seconds.)

RADIOGRAPHS OF GLASS, STONE AND COAL.

The above cases demonstrate the ability to locate by the *x*-rays both glass and stone situated in the anterior segment of the eyeball. As a further proof that these substances can be shown on the plate if the shadow is secured free from the denser portions of the orbital walls, experiments were made with small particles of glass, about 2 x 2 mm. and ½ mm. thick, placed in the internal canthus of the cocainized conjunctiva. The *x*-ray tube was placed well back to the side of the head, and the rays passed through the nasal structures and eyeball to the plate at the opposite side of the head. The shadow of the glass had to pass, therefore, across the entire eyeball before reaching the plate. In every instance the presence of the glass was shown on one or more plates, and it was only when the *x*-

ray exposure was prolonged or the dense orbital bones intervened between the glass and the plate that a shadow of the body was not secured.

Further experiments were made to determine the degree of penetrability to the x-rays of different kinds of glass used in the arts, and also of such substances as granite, marble, cement paving and coal. In Figure 2 is shown a radiographic print of fragments of various objects of crown and flint glass and pieces of lead glass. So far as possible, particles of about the same thickness were selected, placed on a half-inch board, and the radiograph made. With the exception of lead glass, which contains a large percentage of lead, the particles were apparently equally resistant to the passage of the rays, and the shadows show no marked difference in intensity. Lead glass, which is used principally in the manufacture of cut-glass objects, gives a shadow even more intense than iron or steel.

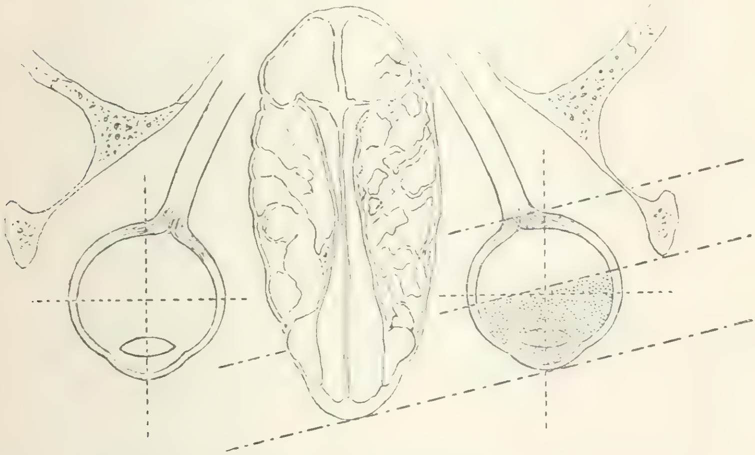

Fig. 4.—External orbital margin 10 mm. back of corneal summit. Dotted areas in eyeball show passage of rays. Uninterrupted by dense orbital bones.

The radiograph of the particles of stone, cement and coal is shown on Figure 3, in comparison with pieces of glass. These fragments were of about the same thickness, and are shadowed, as in the previous experiment, through a half-inch board. There is apparently no difference in the degree of resistance of glass, cement and the various kinds of stone to the passage of the x-rays, the shadows of each having about the same intensity in the print. The particles of anthracite coal were penetrated so readily by the rays that the shadows are recognized with difficulty, even with the short exposure given, indicating the futility of attempts to demonstrate, by the x-rays, particles of coal in the eye, in instances of injuries from this substance.

LOCALIZATION OF GLASS AND STONE IN THE EYEBALL.

In instances of ocular injury from glass, stone and similar materials, in which the nature of the traumatism points to the possible entrance of some of the foreign substance into the interior of the eyeball, at least two sets of radiographs should be made, with the tube at different angles with the plate, in order that the rays in their passage through the eyeball will, so far as possible, shadow the various portions of the globe free from the dense orbital walls formed by the nasal, frontal and malar bones.

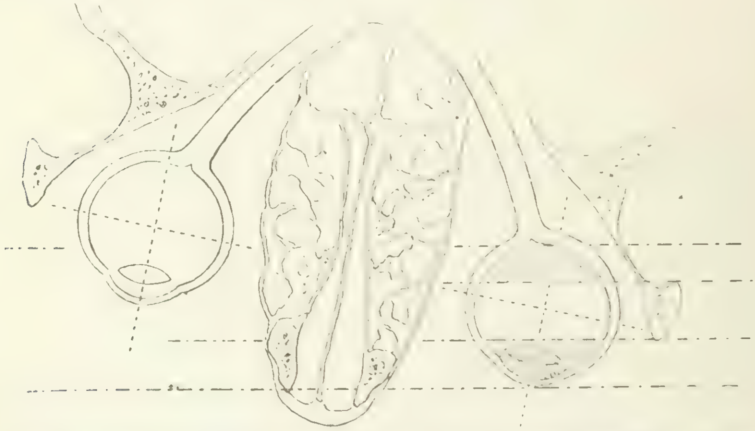

Fig. 5. External orbital margin 10 mm. back of corneal summit. Anterior half of eyeball shadowed on plate free of denser orbital bones.

The densest portion of the bony orbit is at the junction of the frontal and malar bones, forming the external orbital margin. Immediately back of this portion of the orbit the malar and sphenoid join in a thin plate of bone which varies in width from 10 to 12 mm. Posterior to this thin plate the orbital bones are of considerable density. On the nasal side of the orbit the bony structures are relatively spongy in character except at the upper portion, where the nasal bone joins with the frontal.

The first set of plates should be made with the tube placed well back to the side of the head on the uninjured side, so that a shadow of the contents of the anterior segment of the globe will be shown in front of the dense shadow of the anterior orbital wall. With the tube in this situation it should be possible in every case to obtain a shadow of the anterior chamber, lens and ciliary region, free from interference of the bones of the external wall, besides securing in some cases a shadow of a considerable part of the middle of the eyeball through the thin plate of bone back of the orbital margin (Fig. 4). The position of the eyeball in reference to the external orbital margin varies in different individuals to a considerable degree. In about 100 adult patients measured in an out-patient clinic, the shortest distance between the summit of the cornea and the external orbital wall was 10 mm. and the longest was 20 mm. In some instances, therefore, the entire anterior half of the eyeball may be shadowed on the plate free from the shadow of the dense orbital margin (Fig. 5).

In the second set of plates the tube is to be brought more anteriorily, so that portions of the eyeball which were lost by the dense bony structures of the external orbital wall in the first set of plates will be shadowed in the region of the thin plate of bone at the spheno-malar junction.

The first plate of each set should be made with the tube approximating the horizontal plane of the eyeball, and the second plate with the tube a short distance above or below this plane. With the tube below there is secured certain portions of the upper part of the globe, which are liable to be covered in the first plate by the shadow of the dense structures of the nasal bone, but care must be exercised in the second that the bones at the upper and outer edge of the orbit do not obstruct the body.

Particles of glass or stone situated in the posterior part of the eyeball will present greater difficulties in localization, owing to the uncertainty of securing a shadow of the body in a position of the orbit in which a differentiation may be made from the shadow of the dense bony structures in this situation. The position of the eyeball in reference to the external orbital margin and to the thin plate of bone back of this situation will determine the direction the rays must take in the endeavor to shadow the structures of the eyeball free from the denser portions of the orbital walls.

SOME OBSERVATIONS ON WORTH'S METHODS OF TREATMENT OF CONVERGENT SQUINT IN YOUNG CHILDREN, WITH PRESENTATION OF CASES.*

By Linn Emerson, M.D.

ORANGE, N. J.

For obvious reasons this consideration of the subject of squint will be confined to the variety designated as concomitant-convergent. As has been said, no new scientific discovery is ever made by one observer working alone, but by the accumulated labors of many working along the same lines, oftentimes extending over a period of many years. This seems to have been true regarding the subject under discussion. The etiology of convergent squint was but little understood until the appearance of Donders' classic work, and his clear elucidation of the casual relation of hyperopia and hyperopic astigmatism has never been successfully controverted. The strongest argument of the opposers of Donders' theory has been the fact that the majority of hyperopes did not become squinters.

The investigations and observations of Worth seem to have at last very thoroughly cleared up the question of the etiology of squint. While detracting from Donders' epoch-making discovery in no way whatsoever, and conceding the causal relation of hyperopia and hyperopic astigmatism, he insists most properly that the reason why so many hyperopes do not develop squint is because they possess a well-developed fusion faculty or fusion sense, and that in squinters this fusion faculty is deficient or absent. How near Landolt came to striking the keynote twenty years ago is evident from the following paragraph taken from page 359 of Culver's translation: "Even in cases of concomitant strabismus of rapid development, spontaneous diplopia is lacking. But we must not conclude from this that young hyperopes attach so little value to binocular vision that they renounce it forever on the slightest and even transient occasion. On the contrary the great number of hyperopes who do not squint, and who, nevertheless, have passed through the same incidents, have resisted the temptation and have been saved from strabismus by the stability of their binocular vision. It must be admitted that there is with the majority of those who squint a predisposition to strabismus, with whose exact nature we are not yet entirely acquainted."

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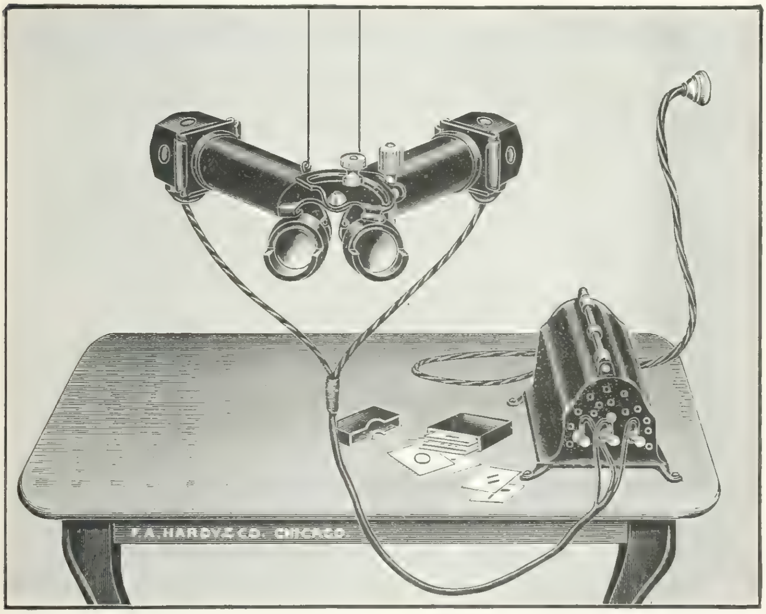
* Read before the Section on Ophthalmology of the New York Academy of Medicine, March 19, 1906.

Valk, who is an opposer of Donders' and Worth's theories, paraphrases Lincoln's celebrated saying, "Some of the cases may have one cause, one cause may cover some of the cases, but we must find one cause that will cover all of the cases," and further affirms there must be "one true and prime cause of strabismus." He does not seem to appreciate the fact that deficiency or absence of the fusion sense is that "one true and prime cause."

There never has existed a single case of concomitant convergent squint in which the fusion sense was not deficient or absent. This also applies to all other varieties of constant squint except the paralytic variety. The failure to appreciate the importance of the fusion sense causes many authorities to classify heterophoria as latent squint. This classification is incorrect. Only in certain rare instances does the heterophoric become a squinter, and the various reflex symptoms which we see in heterophorics are due to their fully developed fusion sense, which precludes the possiblity of their squinting without diplopia manifesting itself.



Worth-Black Amblyoscope and Black's Electrical Attachment with Rheostat.

N. B.—Illustration of amblyoscope is exaggerated in order to show detail of instrument. Manufactured by F. A. Hardy & Co., Chicago, Ill.

The lamps are supplied with current by wires running from the under side of the lamp containers to a bridge rheostat, which has two slides operating from each end of the rheostat to its middle. Each slide controls its respective lamp, and when at the middle the intensity of the illumination is greatest. This is gradually reduced as the slides are moved toward the ends.

That errors of refraction bear the same causal relation to heterophoria as to strabismus must be obvious to all, the difference in the two conditions being due to the presence of the "one true and prime cause of strabismus." When a patient with esophoria has "occasional" squint, diplopia is nearly always present. If the squint becomes "periodic" and diplopia disappears, it signifies some deficiency of the fusion sense, and if left untreated will probably pass on to "constant" squint and the fusion sense from disuse will become more deficient. While there is but "one true and prime cause" of concomitant convergent strabismus, there are no doubt many predisposing causes, such as: 1. Hyperopia and hyperopic astigmatism. 2. Anisometropia. 3. Specific fevers, especially whooping cough, measles, diphtheria, etc. 4. Violent mental disturbances (fright fits). 5. Injury during birth. 6. Heredity. 7. Congenital defects. In the last-mentioned class should be placed cases of congenital amblyopia. I am much inclined to the belief, however, that Davis' theory that there is no congenital amblyopia, if not absolutely true, is very nearly so, and that congenital amblyopia is an extremely rare condition.

Brown and Stevenson very pertinently remark that nature deals but little in exceptions, and unilateral defects are not found in the tongue, nose or ear. The denial of the existence of amblyopia exanopsia can have but little weight with a surgeon who has seen dozens of cases, while under proper orthoptic training, in which the vision in the squinting eye has risen slowly and progressively from 20/200 or 20/100 to 20/50, 20/40, 20/30 and in some few instances to even 20/20. My answer to Valk's question, "Does all the loss of vision take place in the first five years of life and then remain so," is as emphatic a yes as his is no, provided, of course, the case does not receive treatment, in which event the vision often improves.

The following figures are taken from Worth's book to illustrate what occurs when slightly dissimilar objects are fused, and he has formulated a law which governs the fusion of such images: "When the images formed in the two eyes differ in shape, size or position, if the disparity be not too great the oculo-motor apparatus first places the eyes in the most favorable relative positions; the fusion sense, by virtue of its elasticity, then fills up any gap which may remain."

It is not my purpose to further discuss the polemic side of this question, as it will, no doubt, be fully brought out in the discussion which follows. It is, however, most gratifying to note that Dr. de Schweinitz, in the latest edition of his most excellent work, which came from the press in January of the present year, accepts the theories and findings of Worth and his followers without question and accords to his methods of treatment the prominence to which they are entitled.

In a series of over 1,000 cases of convergent squint Worth found 85 per cent. monolateral; over 90 per cent. of these cases developed before the sixth year, and nearly 60 per cent. before the fourth year. He states that the fusion faculty develops before the sixth year, and very few cases secure perfect binocular vision after that age. He gives three grades of fusion: First grade, simultaneous macular perception; second grade, true fusion with some amplitude; third grade, sense of perspective.

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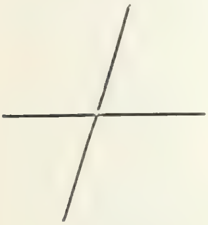

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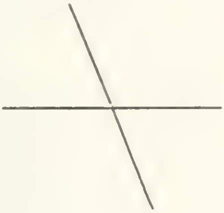

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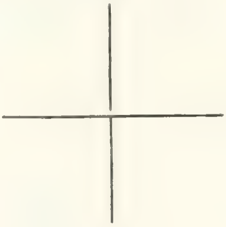

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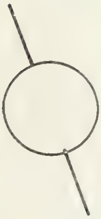

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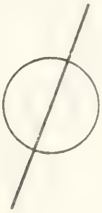

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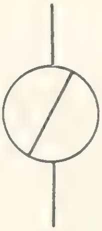


I have invariably noted that, as he further states, the cases of alternating squint are least benefited by treatment. This is due to the fact that while there may be little or no error of refraction, nor amblyopia present in either eye, the fusion sense is markedly deficient or wholly absent. Often the most careful and painstaking efforts, extending over a period of several months, fail to elicit the slightest tendency to simultaneous macular perception. It is interesting to note that in all my observations I have never yet seen a case of monolateral squint in which the fixing eye possessed the higher degree of refractive error. It is not strange that if the amblyopia in these monolateral cases is congenital that Nature is always wise enough to give the amblyopia to the eye possessing the greater error of refraction. The plan followed in the treatment of these cases is as follows:

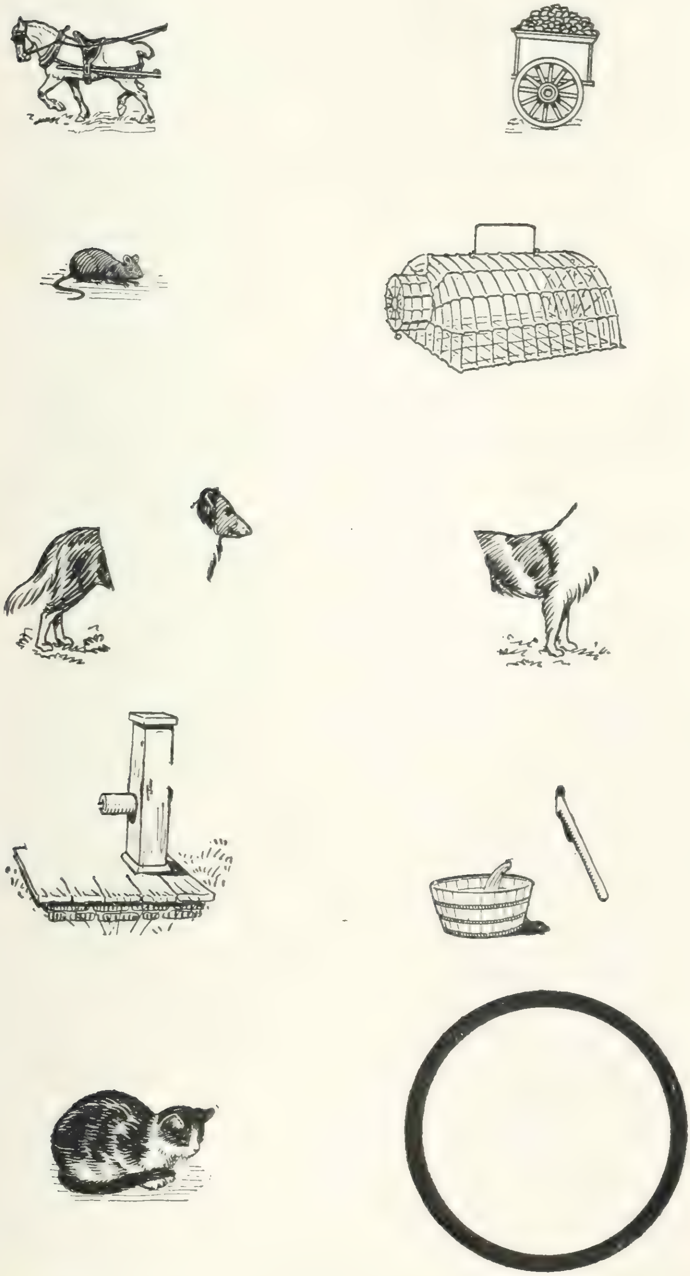
1. Optical correction. 2. Occlusion of the fixing eye. 3. The use of atropin in the fixing eye. 4. Training of the fusion sense. 5. Operation.

The fitting of glasses in the early years of life is done almost entirely by the shadow test, but when possible the findings are verified subjectively. J. H. Woodward and Edw. Jackson both lay great stress on the importance of accurately and fully correcting ametropia.

I am now giving full correction (under atropin) in all cases of convergent squint treated. The use of the occlusion pad for the fixing eye is enforced when possible, but as it is not tolerated in many cases I have grown to depend more upon the use of atropin. The blurring of the fixing eye by the constant use of atropin is, in my opinion, the most important means of improving the vision of the amblyopic eye. This can be carried out for months at a time with no danger whatever to its future function. However, the patient must be kept under observation, as one of my cases which passed from under observation for a considerable period of time had the squint transferred to the sound eye, with resulting reduction of vision and corresponding increase of vision in the squinting eye.

Worth also reports a similar case. When the squint is alternating I often use atropin in both eyes constantly, adding + 3.00 pasters for near. This, in a great measure, removes the desire for accommodation and lessens the tendency to squint. So far as I am aware this plan of treatment is original, as I have no knowledge of its having been used or recommended by any other worker along these lines. The training of the fusion faculty requires time and patience. The amblyoscope has become such a common instrument as to scarcely require any description. The one I possess, here shown, is made by Hardy & Co. It possesses the vertical adjustment suggested by Dr. Nelson M. Black, of Milwaukee. Recently I wrote Hardy & Co., stating my dissatisfaction with their series of slides and suggesting that some new ones for second and third grade fusion be made, such as are shown in Worth's second edition. Dr. Black was consulted and submitted some very satisfactory new designs, which have been made up and are here presented. Since geometric figures do not appeal to small children nor hold their attention, the "bucket" or "pail" slides are the only ones of use in testing for third grade fusion.

I learned that the plastograms made by Bauermeister, Glasgow, are used for this purpose on the other side. After several unsuc-



Some of the figures used in the Worth-Black amblyoscope.

cessful attempts to purchase them here, I wrote to Dr. Black, inquiring if they were obtainable in Chicago. He was kind enough to loan me his book, which was purchased in Glasgow, and I take much pleasure in showing them to you. Only to-day did I learn that Mr. E. B. Meyrowitz has these books in stock, my failure to secure them being due to my looking for them in the optical instead of photographic supplies department.

Dr. Black, who is without doubt the foremost worker along these lines in this country, has also devised an illuminating apparatus for the amblyoscope, by means of which any degree of illumination of the object slides can be obtained. The apparatus here shown is made by F. A. Hardy & Co., of Chicago.[1]

In addition to the amblyoscope I find the stereoscope with Kroll's pictures of great value. As soon as first-grade fusion is well established I give the stereoscope for home use, having it adjusted for its highest possible convergence. This plan of treatment in no wise interferes with any operative procedure to be taken up later. In fact, the chances of parallelism following an operation later are much enhanced by previous orthoptic training. As to just what operative procedure should be undertaken, the claims made for the various operations would seem to prove that each one has its place.

The surgeon who has had a case under observation for two or more years should be able to discriminate with judgment as to whether his patient should have, 1, simple tenotomy on one or both eyes; 2, tenotomy and advancement on one; 3, Panas' operation of stretching and tenotomy on both; 4, advancement on one or both, or, 5, some one of the various tucking or folding operations. Each case must be a law unto itself.

My personal preference is for the advancement operation of Dr. Wootton as modified by Dr. J. J. Thomson. The results are much more satisfactory if the orthoptic training is continued after the operation. The operation of Panas as a routine procedure is, in my opinion, very poor surgery. Overcorrection often follows, and the resulting deformity is worse than the condition previous to operation. The usual course of a case properly treated is somewhat as follows: After careful fitting under atropin, full correction being given, the case is not seen for two weeks, during which time the eyes recover from the effect of the cycloplegic. We are thus able to note the effect of glasses alone; in most instances the squint is appreciably lessened.

The amount of improvement following the use of glasses alone has a distinct bearing on the ultimate prognosis. After taking vision and testing for fusion, both by amblyoscope and stereoscope, atropin is ordered once daily for the fixing eye and the patient instructed to return once a week or once every two weeks, as may seem to be indicated. As Dr. Black has observed, the men in this country seem inclined to make use of fusion training more frequently than Worth recommends and to continue it over a longer period of time.

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[1] This apparatus is described by Dr. Black in the February number of the Ophthalmic Record.

The slides showing bird and cage, clock and hands, etc., are first used, and as vision in the squinting eye improves and first-grade fusion develops we pass on to the use of such pictures as the one-legged man. This slide is particularly valuable in detecting the presence or absence of fusion, as the slide can be turned or even both be put before the same eye, and the little patient does not know whether he really ought to see a one-legged or a two-legged man. Another point observed is that after a certain time has elapsed the patient begins to fix for near with the squinting eye; the atropinized eye, while not used for near, is still used for distance.

Finally the time comes when the squinting eye is used for both near and distance, and the sound atropinized eye becomes the squinting eye. This is the time for careful watching. Atropin is used less frequently and soon discontinued. If the squint does not entirely disappear or reappears in the former squinting eye, atropin is again used, sometimes being used in both eyes, often more frequently in one than in the other. At this period the + 3.00 pasters, before mentioned, are sometimes of service. Each case has to be watched closely and treated as the exigencies seem to require. When the patient can take the bucket slides and tell whether the bucket is upright or bottom up (whether he is looking at the outside or inside), third-grade fusion is present and a final cure is almost certain.

As before mentioned, a stereoscope with Kroll's pictures is given for daily home use as soon as first-grade fusion becomes well established; a pad worn over the sound eye two or three hours daily accelerates the recovery, but its enforcement is often impossible. I have as yet had no experience with the plastograms, but it would seem probable that they would much facilitate the home treatment. After the case is cured the patient should be seen occasionally, and tendency for the squint to recur or the amblyopia to increase be combated by appropriate treatment. The proper treatment of a stubborn case may extend over a period of five years. The prognosis seems to depend most on the age of the patient. In cases over ten years of age little can be expected; from six to ten a certain number of cases can be cured without operation, but the process will require patience and fortitude. Between the ages of five and six the prognosis is good, between four and five better and between three and four best. While I treat all cases possible, even down to twelve or fourteen months, I am free to confess that my results have not been satisfactory in cases under two and one-half years.

The difficulties and objections to this plan of treatment are well summarized in the excellent monograph of Brown and Stevenson. "Generally, mothers regard squint as originating in some external accidental circumstance, the evil example of a companion or nurse girl. They dread an operation and desire the treatment by mild means. But spectacles are generally regarded with great suspicion, partly because they are supposed to be dangerous in the case of falls or mishaps, partly because they are a continual source of small expenses for the repairs, etc., and partly because they are considered only one degree less ugly than the squint. But the objection is, patience and training are required. At first diligence is shown, but after a time absence of visible results is demoralizing, and the untrained mind calls, as it always has, for a miracle. Now the modern miracle is a surgical operation: it is dramatic and appeals to the emotions and the immediate effect on the deformity is obvious.

"The fact that it is frequently superfluous, and may have ultimate ill effects in the way of divergence or want of muscular balance of an annoying character (either visible or latent), is scarcely known to the public, and many practitioners seem indifferent to the chance of its occurrence, as it is not due till many years afterward. But it is our duty in dealing with any operation, whether of disease or hygiene, to consider not immediate effects, but what may be anticipated as consequences in adult or mid-life." It has been a great source of satisfaction to me to observe how much less opposition I have encountered from parents during the past year than when I first began this work. This is, no doubt, in a large measure due to the fact that they are able to see fifteen or twenty cases under treatment making satisfactory progress each time their child is brought for examination. It is much to be deplored that opposition to this plan of treatment comes frequently from the medical profession and sometimes even from ophthalmologists. Statistics are often unreliable and can generally be manipulated to prove the claims of the author; therefore I have no statistics to submit.

Largely through the courtesy of my chiefs of clinic, Drs. Van Fleet and Lewis, at the Manhattan Eye and Ear Hospital, I have treated upward of 300 cases during the past three and one-half years. A certain per cent. of these cases have been cured, but nearly one-third of them are still under treatment. The more cases I see the more I become convinced that treatment should be instituted before the fourth year, as most of the cases seen between the second and fourth years yield rapidly to treatment. The cases seen early in life who have squinted but a short time are almost invariably cured in a few weeks or months. It would seem that Worth's claims are modest and that with improved technic from 75 per cent. to 90 per cent. of cases of convergent squint under five years of age can be cured by methods other than operative. My presentation of cases here to-night is not a procession of triumph. The presentation of twenty-five cured cases, while perhaps gratifying to me, would not, in my opinion, be as instructive or conducive to a thorough discussion of this subject as the ones I am bringing before you. A few of them are cured cases, to be sure, but most of them are still under treatment and present phases which, I trust, will be of interest to you all. The histories of the cases presented are omitted, as they would be of little interest unless accompanied by the remarks and discussion which took place.

A CURE OF CONVERGENT STRABISMUS BY ORTHOPTIC TREATMENT AT 20 YEARS OF AGE.

By H. V. Würdemann, M.D.

MILWAUKEE, WIS.

As Dr. Emerson in the foregoing article does not give any example of the working of orthoptic methods for the cure of squint, I cite a case which has been of intense interest to me, as it occurred in an intelligent, well-educated young man who paid full attention to his treatment, thus not only affording a full opportunity for observation, but giving a good description of the subjective elements in the case. The latter is not possible with children in the early age at which the orthoptic treatment is indicated and at which it is usually successful. Out of something over 100 cases of squint that I have treated by orthoptic methods during the last three years, in only one other—a maiden of 20 years—were the eyes made parallel and binocular vision restored after the age of 10 years. This girl was not under observation a sufficient length of time for as full study as is afforded by the following case, the outcome of which was most gratifying. Worth, Black and other authorities have not yet reported the return of the fusion faculty at such a late age, and for this reason the case itself is unique:

Mr. F. T. K., aged 20, mechanical draftsman, first seen Jan. 6, 1906. Alternating convergent strabismus since childhood, now 25°; left eye usually fixes. V. $O^2 = 6/\text{VIII}$; no binocular vision and no diplopia could be elicited either from history or by testing with red glass, phorometer or stereoscope; however, he could see double with the Worth-Black amblyoscope when the light was graded before either eye, but this only for a fraction of a second, when the impression speedily passed away.

Versions with Stevens' tropometer: O. D. $\substack{\text{in } 50^\circ \\ \text{out } 40^\circ}$ O. S. $\substack{\text{in } 60 \\ \text{out } 35^\circ}$ Under atropin V. $\substack{\text{O. D.} +2.50 \\ \text{O. S.} +2.00}$ 6/IX. and eyes straighten about 10° leaving strabismus convergens about 15°-16° (Worth-Black strabometer). Full correction ordered for constant use.

January 17: His eyes have recovered from atropin. He was told to use the wall-to-wall exercise at home morning and evening for ten minutes. He has been at the office six times, when the amblyoscope has been used in the usual way; he now readily detects the double images of the amblyoscope and can fuse them and hold them fused even when the tubes are pulled outward beyond the position of orthotropia. Now we also find that double vision is excited by the red glass, and after stimulation with the amblyoscope we can hold his eyes straight for a while, the muscle balance ranging from 16° to 1° esophoria. He was now given the stereoscope and set of Kroll's colored charts; he could easily fuse the like pictures, but could not bring the unlike pictures into position. On this date we can even maintain binocular vision long enough to measure the duction; adduction 10°, abduction 9°. Three sittings of exercise with Risley rotary prism of the phorometer were given.

February 3: He has reported to the office once a week, and on this date is given the Hale charts for stereoscopic exercises; can fuse most of them and just has beginning of perception of *depth,* and expresses himself as seeing much differently and that he has a sense of perspective which he never before had. His eyes are usually straight, but excitement brings on convergence, when he sees double!

February 6: Patient was shown at the meeting of the Milwaukee Oto-Ophthalmic Society.

February 10: Adduction 20°, abduction 12°, exophoria 3°, left hyperphoria 1° at 6 M., 2½ exophoria at 0.30 M. The duction exercise at home (wall-to-wall) is stopped. He now can see all the figures in Hale's charts and is given the Wells charts, which have some very difficult fusion figures, which are drawn distorted, but when seen binocularly with the stereoscope are made to appear straight, this requiring a high degree of the fusion sense.

March 3: Full binocular vision; he can fuse anything with the stereoscope; eyes are always straight, except to the cover test.

March 24: Eyes parallel under all conditions, even when excited, when wearing full correction; 1 D. less of convex spheres, however, allows of accommodation for distance and with it an esophoria to cover test is elicited.

March 27: Patient shown to the Milwaukee Medical Society with foregoing history. Eyes parallel, but the excitement incident to the exhibition brought on excess of accommodation and with it latent convergence, indicated by blurring of vision for distance while wearing glasses, and a latent strabismus, i. e., esophoria.

April 14: Eyes straight, exophoria 1° at 6 M., esophoria 5° at 0.30 M.

A SECURE, LOOPED, SINGLE-STITCHED ADVANCEMENT SUTURE, WITH A CONSIDERATION OF SCLERAL ANCHORAGE.*

Mark D. Stevenson, M.D.

AKRON, OHIO.

In every case of squint non-operative treatment should be first considered and, when practicable, tried for months. A very thorough examination should be made for ametropia after the careful use of some reliable cycloplegic; the rotative power and the condition of the ocular muscles should be definitely ascertained, e. g., by the perimeter, different muscle scales, or by Stevens' tropometer. The power of convergence when the patient looks from a distant to a nearby object should be carefully determined. When proper lenses and other means for developing conscious vision in the squinting eye alone and in conjunction with the other eye, fusion training, orthoptic exercises or other non-operative means have failed, not only the advisability but the kind of operation, i. e., advancement, tenotomy, or both, should be considered, which involves too much to be dealt with here.

If an advancement operation is necessary or advisable, the operator should choose some method with a view to its simplicity and ease of performance, the nature of its scleral anchorage and the tenaciousness of its hold upon the muscle or tendon. My single-stitch operation is much like Worth's, except in the most important part, the method of suturing. He uses two sutures, making four knots, whereas only one suture and one knot is made in mine, which is also more adjustable. The operation is described in full in the *Journal of the American Medical Association,* Sept. 9, 1905, and in the transactions of the Section of Ophthalmology, A. M. A., for the same year.

An iron-dyed, black, braided silk suture, about No. 8 in size and one-third meter long, is threaded with two needles, one near each end. The thread is boiled just before operation, and with sterile fingers is drawn across a small piece of sterile gauze on which some sterile 2 per cent. iodol ointment has been placed. The ointment enables the suture to slip more readily through the tissues, aids slightly in rendering it antiseptic, and makes it so that it will not absorb secretions so readily and thus convey them from one part to another. This method of preparing the suture is simpler and, I think, better than those previously described. Such sutures do not cut through the tissues so readily, because they are nonabsorbent, and for the same reason they do not cause so much local irritation and inflammation of the flesh canals which contain them. Some operators prefer catgut in order to avoid the removal of the suture.[1] However, when the suture is not buried this is very simple, and, since the catgut is stiff and thick, large flesh canals are required, which are difficult to obtain in the sclera and are sometimes torn through during the introduction of the suture.

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* Read before the Ophthalmological and the Otolaryngological Section of the Cleveland Academy of Medicine, March, 23, 1906.

The needles should be sharpened on a good oil-stone, examined with the same care as cataract knives and always kept in a dry place. Except when in use they should be handled only by forceps, never with the fingers, which might cause them to corrode, due to moistening. It is well before the operation to examine the needles under a strong magnifying lens, such as a powerful loupe or a + 20 D. S. lens (Casey Wood), for often the ends will be found bent or forked, which would prevent the needle from passing readily. Very much depends upon the sharpness of the needles.

The first part of the operation having been completed as described in *The Journal of the American Medical Association*, Sept. 9, 1905, and with the advancement forceps grasping conjunctiva, capsule of Tenon, and muscle together, one of the needles is passed from without inward (toward the globe), through the conjunctiva, capsule, and junction of the middle and lower thirds of the tendon or muscle. The same needle is then passed outward (away from the eyeball) through the lower margin of the tendon or muscle, through the capsule and conjunctiva, and then is carried back (inward) through all three just behind the first point of entrance, forming a complete loop inclosing the lower third of the muscle or tendon and some of the capsule and conjunctiva. Next, after freeing the conjunctiva from the sclera, to within 4 or 5 mm. from the cornea, the needle is carried under the conjunctiva almost to the edge of the cornea and in the manner to be described shortly, is stitched deeply a little below the horizontal meridian, through the episcleral tissue into the sclera. The needle on the other end of the suture is likewise used, making a loop on the upper third of the tendon inclosing some capsule and conjunctiva and also making an episcleral and scleral anchorage near the cornea and usually close to the other suture, then the two sutures are tied in the first part of a surgeon's knot. If the suture material is dry, no ointment having been applied in order that it may slip readily, it is better to make the first part of the knot with a single turn, so that the suture may be tightened more readily with less likelihood of breaking.

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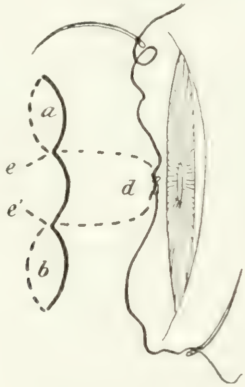
[1] Valk: "Strabismus, or Squint."

The suture now consists of two loops, one on the upper, the other on the lower third of the tendon or muscle. These loops are connected by a central crosspiece lying on the conjunctiva. Each loop is also connected to a separate anchorage in the sclera and the two ends of the suture are tied between the two anchorages in the sclera. It is sometimes sufficient to pass only one needle through the episcleral and scleral tissue, tying the suture as before. All superfluous tissue should be removed, only sufficient being left to hold the sutures and close the gap when the sutures are tied.



If thought advisable, next perform the proper degree of partial tenotomy on the strong opposing muscle of the same eye, just sufficient to weaken it temporarily, but not enough to change its point of attachment much, if any, so that ultimately its rotative function will be interfered with but slightly, if at all. However, this muscle, if temporarily weakened, will not so strongly oppose the advanced muscle or tend to tear the sutures from their moorings, due to the diminution of the otherwise varying high degree of tension made by this uncut muscle. Both muscles temporarily and partially suspend function as a result of the traumatism, thus in some degree relieving the strain otherwise brought to bear on the suture, while at the same time they both heal.

In tying the suture the patient should look steadily at some small distant object, the hand being passed alternately before each eye while the suture is tightened, until the eyes cease to move, when the desired rotative effect is secured and the knot is completed. When general anesthesia is used, only an approximate correction can be expected. It is usually advisable to overcorrect five or more degrees—advance the eye beyond the apparently desired position. In such cases it is often preferable to tie the suture under local anesthesia after the patient has recovered consciousness and the cover test can be used. It is not necessary to suture the conjunctiva on the side of the advancement, but it is sometimes best to do so over the tenotomized muscle.

When there is pain or much discomfort, cold applications should be made at regular intervals the first day, especially for the first four to six hours. Frequently I make no applications. A monocular gauze pad should be used for about seven days, usually fastened over the eye by adhesive strips. The eye should be irrigated with some very mild antiseptic or sterile solution and dressed each day. Since this eye can not see because of the gauze pad covering it, no collyria are instilled unless specifically indicated. In the eye not operated on, it is usually advisable to instil one drop of 1 per cent. atropin sulphate solution to insure loss of accommodation and convergence. The same eye should be covered with a shade for twenty-four or forty-eight hours, which may be raised when necessary. The sutures are removed at the end of one week. The patient should direct the eyes straight forward, turning the body and head instead of the eyes, for the first few days. If lenses are worn, pieces of adhesive plaster may be so placed on them that a narrow vertical clear space may be left, through which the patient can see, except when the eyes move laterally. Semi-darkness is to be preferred for the first two days and the eyes should be used as little as possible for at least one week. If morphin has been used previously without any ill effects, it is sometimes well to give a hypodermic injection shortly before operating, so that there may be less pain during the operation and less subsequent suffering and restlessness. If necessary, a dose of sulphonal or other hypnotic may be given the first night to induce sleep.

This suture is open to the same objection that could be urged against all of the single-stitch variety, and that is in case any portion of its mooring should slip it would affect the whole suture; but this accident will not occur if it is properly made and good scleral anchorage has been secured. By this suture the upper and lower thirds of the tendon or muscle are securely held in separate loops, but not strangled, while the circulation in the middle third is not interrupted, although it is also supported externally by the middle crosspiece of the suture which connects the two loops. The more tension put on this suture the more securely it will grasp the tendon or muscle, and only one knot is necessary. Furthermore, it can adjust itself, especially at its points of anchorage, as in the pulley operation. Cartwheel motion can be influenced by the location of the anchorage into the sclera above or below the horizontal meridian, if operating on a lateral muscle. It is simple, easy, takes little time to make, and it holds.

If Tenon's capsule is pushed well back on the muscle or tendon it can afford considerable support to the suture, and at the same time, because of its great elasticity, it will not limit, ultimately, the rotation of the eye to the opposite side. A careful study of the Y-shape of the muscle, tendon and check ligament will make clear why an advancement will increase rotation and not diminish it as a tenotomy does, and also why advancement of the capsule forward within certain limits will not tend to decrease the rotation of the eye to the opposite side. This suture securely grasps the muscle or tendon, whether thick or thin. There is but little bunching of the muscle, this being partially prevented by the capsule and conjunctiva, but chiefly by the fact that the two scleral anchorages are a certain distance apart. There is, therefore, only slight tendency for the outer portion of the loops to draw together and not any for the middle portion to do so. After healing there is a firm and broad attachment of the muscle to the globe. Since the fibers of the muscle and tendon run from before backward, a suture in order to hold securely must grasp the muscle from the side in a loop, just like binder twine grasps the middle of a sheaf of wheat. A straight simple suture without some looping tends to cut its way readily between the fibers, just as the teeth of a comb glide easily through straight hair. Such a straight suture is only prevented from slipping by the slight decussation of the fibers and by the connective tissue between them. It would take a considerable number of straight sutures to hold the muscle as securely as this looped one, with a correspondingly greater number of flesh canals in the muscle or tendon and in the sclera.

The sclerotic[2] consists of fibrils of connective tissue united into bundles which run chiefly in two directions, meridionally from before backward, and equatorially, concentric with the margin of the cornea. There are also many oblique bundles, and in front the entrance of the tendons of the recti greatly alters their general arrangement. The recti tendons reinforce the fibers running from before backward. In front, near the cornea, the superficial bundles lie chiefly from before backward, the deep equatorially. Many, fewer in youth, fine, weavy, elastic fibrils mingle with and lie in the same direction as the white connective tissue fibrils. These elastic fibrils

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2. Parsons: "The Pathology of the Eye," vol. i, chapter iv

are more abundant in the outer layers, and at the limbus they circle around the cornea. The sclerotic is thinnest at the equator (Parsons) about 6 mm. from the cornea.[3] Toward the cornea the sclerotic becomes thicker, being reinforced by the expansion of the tendons of the recti and the greater number of elastic fibrils. It would seem best to obtain scleral anchorage where the sclera is thickest, near the cornea. I make the two anchorages in the sclera close to the cornea and from 4 to 6 mm. apart. If operating upon a lateral muscle, cartwheel motion can be regulated by the position of the looping in the muscle, tendon, capsule, and conjunctiva at one end of the suture, which at this end should be centrally placed, and also by the position of the anchorages up or down in the sclera, but of course the vertical motion of the eye will also be affected. In making the scleral anchorage the needles are so passed through the episclera and sclera, their sharp points toward the cornea, that their incisions usually incline toward one another at an angle of about 90 degrees. The knot lies between these two scleral anchorages. Because of this peculiar direction of insertion, the suture will pull against (be supported by) all the different bundles or fibers, meridional, equatorial, and oblique, as well as against the circular elastic fibers. But if the line of incision is from before backward, i. e., if the needle is directed toward the center of the cornea, but little support is given the suture by the meridional fibers, which run in the same direction and which chiefly make up the superficial bundles in this location. Therefore, support is obtained only from the oblique and the equatorial fibers, the latter in this location being chiefly situated deeply in the sclera beneath the suture canal. Besides, in this method, the whole tension is placed upon the end of the suture canal nearest the cornea, and the resistance offered to the suture depends principally upon the depth of the suture canal, which at the ends must necessarily be shallow. This is true not only in the sclera, but also in the episclera and conjunctiva. In the method which I advocate the tension is made sideways, flat on the conjunctiva, and hence is distributed throughout the whole length of the canal and not merely on the end, depending not only upon the depth of the suture canal but also upon its length. Since the sclera in this location is ½ mm. or less in thickness, it is easier to increase the length than the depth of the canal. Permit me to give an illustration. One end of a rope, fastened at the other end, may be readily drawn through shallow water if doubled straight back upon itself, as but little resistance is offered by the water, but it may take much force to pull the free end of the rope through the water when at an angle of 90 degrees or more to the portion at the other end, the water offering resistance to every part of the rope instead of to the surface of a small loop only.

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[3] Quain's Anatomy, vol. iii, part iii, p. 13.

Occasionally, as before stated, I make only a single scleral anchorage, and it is better in such cases to get a canal 2, 3, or sometimes even 4 mm. long, the canal forming a small angle—much less than 45 degrees—with the long axis of the head or body if operating on a lateral muscle. It might seem best in these cases to have the suture canal lie parallel to the long axis of the head or body, as it would receive the support of the oblique and meridional fibers, the latter composing most of the superficial bundles of the sclera. However, I prefer to have the canal at a small angle to this long axis of the head, so that the suture will be supported, at least slightly, by the deeper equatorial fibers. If the angle be too great the suture will cut the end of the canal closest to the cornea. Of course, the bundles of fibers in the sclera interlace with one another, there being no regular arrangement, but fibers running in certain directions are more common in certain portions of the sclera, and this fact should be utilized. Any single anchorage where the thread doubles directly back upon itself, as in commonly employed methods, instead of passing across to another similarly placed anchorage, should not have its suture canal running from before backward, but as just described. In some few cases the conjunctiva and episclera are sufficiently strong to give anchorage, but they should not be depended upon. The sclera may be sutured with impunity, but, of course, gentleness should be exercised, the needles should be very sharp and should not be pushed further than about one-half way through the sclera, which in this location is one-half millimeter or a little less in thickness. As before stated, the conjunctiva should be separated from the sclera to within 4 or 5 mm. of the cornea, this undivided strip next the cornea being the proper location for the anchorage. The conjunctival and episcleral tissue, not being divided from the sclera in this space, offers better anchorage for the suture. In passing the needle through these tissues it is necessary to go directly through the episclera deep, one-half way, into the sclera and then out through sclera, episclera, and conjunctiva near the corneal margin. The cornea is not harmed by the suture or by its ends resting upon it. The puncture should be made sufficiently long and deep the first time, for if the needle cuts its way out it is impossible to get much assistance from the adjacent conjunctiva and episclera, safe anchorages then depending almost entirely upon the sclera.

Cases are also met, especially years after some previous operation, or in old people, in which there is scarcely any episcleral tissue and the conjunctiva is thin and tears readily. Sometimes the conjunctiva does not give even sufficient support to the fixation forceps to hold the eye while the needle is being inserted. In these cases a sharp needle may be started without any fixation of the eyeball. Then, turning the point of the needle outward, oppose it to a strabismus hook or to one blade of a fixation forceps pushed steadily against and just over where the needle should exit from the sclera until the needle passes through. This is quite readily done and in many cases is a much better method than to try to steady the eye by fixation forceps, since the globe is not pulled on so much, nor the conjunctiva torn so freely, the whole process being confined to a small part of the sclera.

A great deal of pain can be caused by the faulty construction of the advancement forceps. I have described a forceps[4] which if properly made can greatly obviate this difficulty. Of considerable assistance in the performance of this operation is a needle holder with which the needle may be readily grasped and released and which has no catch device, the operation of which jerks the needle. The more the needle is jerked the more liable it is to cut its way out and cause pain. I described a simple needle holder in *The Ophthalmic Record,* November, 1905. The best way to understand and remember the description of a suture is to make a narrow tape represent the muscle and place it on a piece of cloth on which the cornea has been represented by a chalk mark and make the suture with a needle and thread. Operations on the vertically acting muscles are performed in the same manner as on the lateral, but details are usually described regarding the lateral only, since operations on them are much more common than on the vertical muscles.

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[4] The Ophthalmic Record, December, 1905.

ANTIPYRIN KERATITIS.

By Prof. Dr. Mitsiyasu Inouye.

UCHI-SAIWAI-CHO, TOKIO, JAPAN.

[Translated from German Manuscript by H. V. Würdemann, M.D., Milwaukee.]

Uhthoff, in his work,[1] described inflammatory changes in the conjunctiva and the lids, amaurosis, amblyopia, and mydriasis from antipyrin intoxication, but no antipyrin keratitis. Neither the literature of Japan or that of other countries mentions it, except that the case reported by Mizno seems similar.[2]

Mizno saw a 51-year-old woman for the first time Oct. 2, 1904. About noon of September 30 previous she noticed red plaques, first appearing on the left hand, then on the right, and then on the lips. Blisters afterward formed on these places, and she immediately felt pain in these spots, and then in the right eye, in which a flow of tears began and she became photophobic. On examination the conjunctiva of the right eye was found hyperemic, in the middle and lower temporal edge of the cornea an erosion, 3.5 x 2.0 mm., was observed. Attached to the upper edge of the erosion was a membranous tag, springing from the center of the cornea. The blisters on the red spots of the lower lip and left hand were quite large. Mizno decided that the eye disease and the erythema could be ascribed to antipyrin poisoning, and accordingly experimentally rubbed some antipyrin powder into the skin and gave her 0.5 gram antipyrin at one dose. In ten minutes an intense reaction occurred, but afterward the patient went home and was indisposed for some time. A little later than usual, itching and scratching began, the pain in the right eye became worse and the erythema enlarged, and new blisters formed on those plaques which had previously been free from them. More erythema appeared on the left frontal prominence and on the back of the right foot. On that day she felt much worse generally, on account of headache by reason of an unknown dose of antipyrin which had been given by another doctor. On examination three days later, the corneal erosions were so much healed that they did not become colored on instillation of fluorescein solution. Three new erosions appeared in the inferior nasal quadrant of the cornea, but later disappeared.

I have also observed one case of antipyrin keratitis, differing in many respects from that of Mizno.

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1. Die Augenveränderungen bei Vergiftungen, Graefe-Saemisch, 2d edition, vol. xl.
2. Nihon-Gankwa-Gakkwai-Zasshi, vol. viii, No. 11, November, 1904.

A noblewoman (Baroness), 48 years old, complained that as soon as the sunlight struck her skin, for instance whenever she walked in the garden without a parasol, the integument became red and irritable, attended by great itching. For two years she had used antipyrin on her face and about her fundament. She consulted me Nov. 11, 1905, and said that on the 9th of the same month, at 10 a. m., she had taken 0.8 gram of antipyrin and at 3 p. m. 1.0 of the same drug. At 8 p. m. both eyes became painful and swollen; at 10 o'clock the swelling and pain being at their height, so that she passed the entire night without sleep. At the time the eyes became swollen, the lips, the mouth, tongue, side and anus likewise swelled, but on the following morning the pain in the eyes somewhat diminished. The intensity subsided somewhat by evening of the next day and only four red spots persisted on the back of the hands.

On examination, the entire face with a small portion of the skin at the edge of the hair and the region of the lower jaw was red and swollen. The swelling was most pronounced in the upper eyelids, particularly on the right side. The conjunctiva was free from hyperemia. Many small infiltrations, to the number of 25 in the right and 16 in the left, were observed in the cornea close to the limbus. In one spot, two of the neighboring infiltrations had coalesced into a larger one. These infiltrations were not regularly disposed over the entire surface of the cornea, but were so placed that in the right eye the outer portion, and in the left eye the outer upper quadrant, were free from infiltration. On oblique illumination and magnification by the loupe, many additional little infiltrations could be seen in the superficial layers of the corneæ, as though it had been etched with acid. The papillæ seemed to be swollen on ophthalmoscopic examination. The keratoscope showed the corneal images to be irregular. The visual acuity was so diminished that the patient could only count fingers with the right eye at 1.0 m., and with the left at 1.5 m.; but she was likewise highly myopic.

I immediately instilled a 2 per cent. dionin solution into the eyes; in a few minutes the pain was so much less that she was enabled to easily open both eyes. Then boric compresses were ordered. This night the patient slept well for the first time. On the following day the infiltrations in the corneæ were not so plainly seen and were lessened in number. The upper portion of the right cornea became so much more opaque that she herself, by the best of light, could not even count fingers. The redness and swelling of the face speedily disappeared. The sight of both eyes became better and she could count fingers at 2.5 m. Dionin solution was dropped in again on this day and on the next. On November 13 the infiltration in the upper part of the right eye was not apparent to careful examination in good light, and the small spots could not be seen in either eye. The corneal picture soon became entirely normal.

Many French oculists customarily use from 1 to 25 per cent.

antipyrin solutions in the eye, and even use it in powder form. Although as yet no cases have been reported from the direct application of antipyrin, except these two, yet as internal administration has produced corneal inflammation in these cases, we should certainly bear in mind the possibility of damage to the cornea from the use of this drug, especially from its direct application.

THE EFFECTS OF "FULL" AND OF "MINIMUM" DOSES OF ATROPIN SULPHATE AND OF HOMATROPIN HYDROBROMATE.

By Lucien Howe, M.A., M.D.

BUFFALO.

[From the first volume of "The Muscles of the Eye," now in press, by G. P. Putnam's Sons, New York.]

At the outset it should be observed that solutions are uncertain and not to be relied on for exact measurement. No matter how accurately a solution is made, it is apt to undergo changes in a short time by evaporation or deterioration. Even when it is perfectly fresh we can not be certain that a definite amount reaches the conjunctiva or is absorbed.

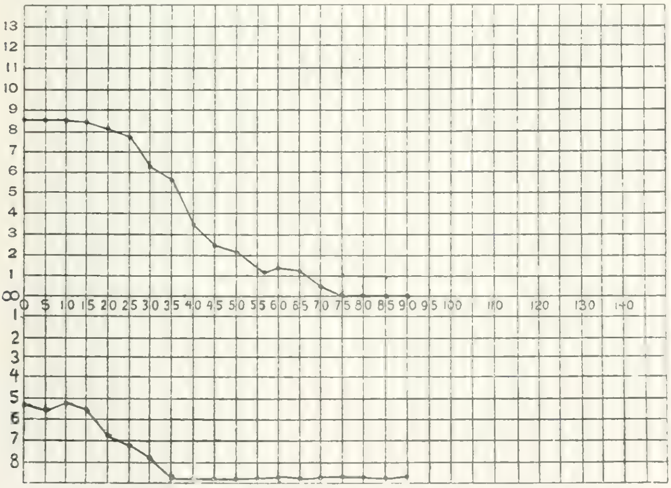

Fig. 123.—Immediate effect of a full dose of atropin.

In this, and in all similar diagrams of this group, the numbers on the left, reading upward, represent diopters of accommodation, while the numbers reading downward represent millimeters to show the diameter of the pupil.

Again, drops differ in size, and even when a single drop of average size is applied to the conjunctiva, the tears may cause more or less to be washed away, or it may pass off at once through the canaliculi if they happen to be unusually large. A much more exact method of application is by means of the *ophthalmic discs* now made by several reliable pharmacists. In the experiments here referred to these discs have been used. . . .

The foregoing illustrations of the immediate and of the subsequent effects of a full dose of belladonna were first given about half a century ago. Since then they have been copied by Landolt, by Norris and Oliver, and in nearly all the larger text-books in different countries. In view of the fact that so many practitioners make use of solutions of atropin for this purpose day after day, it is rather surprising that there exist very few corroborative experiments to show the exactness of these well-known curves. In attempting to verify the measurements, it has been very difficult or impossible to obtain curves which are as regular as those given by Donders. Especially is this the case with the weaker doses, or soon after any dose begins to have its effect. Thus, in measuring the point at which the person says he can see a given set of test types with distinctness, there is a variation sometimes at one position and sometimes at another, so that if the examiner records accurately what he finds, independently of what he thinks he ought to find at a given time, my own trials, at least, prove that the resulting curve shows various irregularities. It appears also that Snellen had a somewhat similar experience (B 390).* Figures 1 and 2 show the immediate and also the subsequent effects of 0.0001 of a gram of atropin sulphate applied to the conjunctiva. This amount of the salt is approximately the same as that contained in a "drop" of a solution of one grain to an ounce, understanding, as we should, the

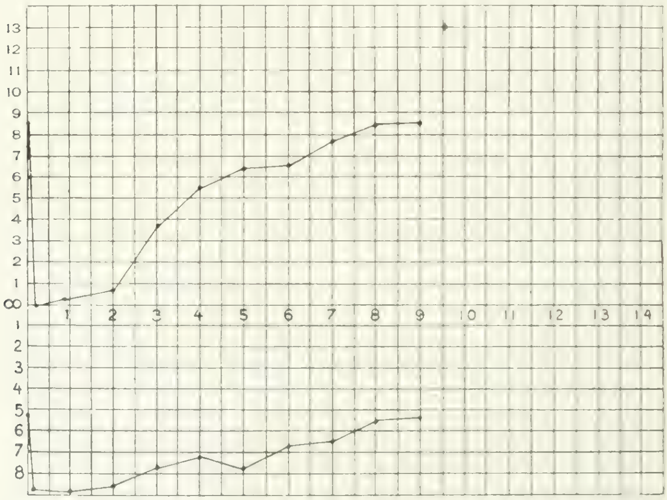

Fig. 124. Effect for nine days after full dose of atropin

decided variation in the size of drops. That is, if we estimate roughly 500 drops to a fluid ounce, then each drop of such a solution would contain about .065/500 or 0.00013 gram.

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* Numbers like this are simply references to the bibliography (B).

It is important to observe in this connection that we obtain for the majority of eyes about the same curve, no matter whether we apply to the conjunctiva 0.0001 gram or 0.0005 gram or any dose between those limits. When the dose is rather stronger than 0.0005 gram, the curve does not drop much sooner or more rapidly, but it is longer before it begins to rise. When the amount used is decidedly less than 0.0001, we find quite frequently that the curve showing changes in the accommodation drops slowly, or with irregularities, although the effect on the pupil is still quite constant. For practical purposes, therefore, we seem warranted in considering any amount between these limits as what may be called a "full dose." Several of the manufacturers prepare an ophthalmic tablet containing 1/500 of a grain, and also 1/150 of a grain.

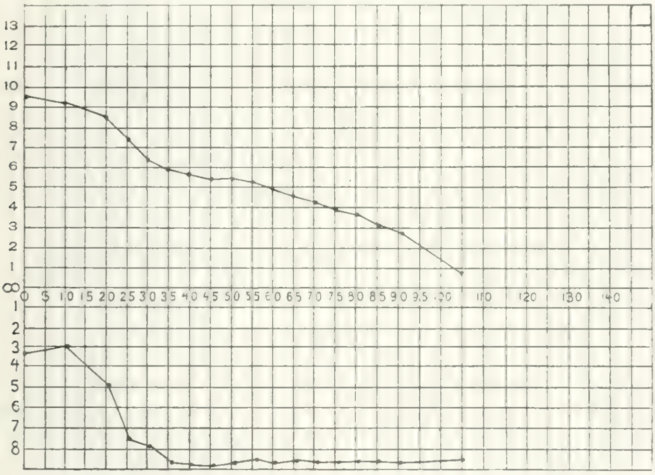

Fig. 125.—Immediate effect of a minimum dose of atropin on a young subject.

What Is the Minimum Amount of Atropin Sulphate Which Will Ordinarily Dilate the Pupil?—In as much as atropin acts both as a mydriatic and as a cycloplegic, and as it requires a decidedly less amount to dilate the pupil than to affect the accommodation, it is desirable to consider first the minimum dose which will act as a mydriatic, before we study the minimum amount which will paralyze the accommodation, although for clinical purposes the latter is much the more important aspect of the question.

Only a few references can be found in the literature to the minimum amount which will act as a mydriatic. Donders (B 378, p. 31) says that if a solution of 1 to 120,000 is kept "long" in contact with the cornea it will dilate the pupil. Later Feddersen (B 380) tried the effect of very weak solutions on 76 different persons. Among these he found that when he applied to the conjunctiva enough of a solution to represent 0.000001 gram, there was mydriasis in about 42 per cent. of these 76 persons, and when he used 0.000002 gram every pupil dilated. My own experiments on the eyes of soldiers accord fairly well with these findings.

An examination of the statements made on this subject, even by trained observers, shows that considerable confusion exists as to the use of the term "mydriasis." Some writers mean by this word a slight enlargement of the pupil and others apply it only to the maximum dilatation. We shall see later that complete dilatation of the pupil is often as difficult to obtain as is complete relaxation of the accommodation. For practical purposes, therefore, we may consider that the pupil of an adult is dilated when it measures more than seven or eight millimeters in diameter. If, therefore, we are to understand by "mydriasis" not simply the slight enlargement of the pupil, but its considerable dilatation, then apparently it is better to place the minimum amount of atropin sulphate necessary to produce this at nearer 0.000005. Even a very much smaller amount will produce marked dilatation of the pupil of a dog or other animal whose cornea is thin.

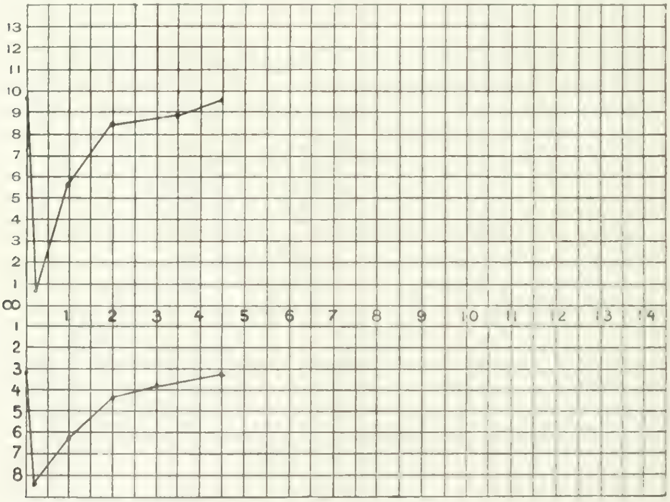

Fig. 126. Effect four and a half days after a minimum dose of atropin.

What Is the Minimum Amount of Atropin Sulphate Which Will Ordinarily Relax the Accommodation?—If the aim of the practitioner is simply to put the ciliary muscle at rest—in other words, if he only cares to determine the *refraction* of an eye, then the information which we have long possessed as to the physiologic effect of a full dose is quite sufficient. But if it is desired to learn also something of the *condition of the accommodation* in a given case, he must use a small amount of the drug and then observe carefully the behavior of the ciliary muscle. When we come to deal with the pathologic aspects of this study, we shall learn that an imperfect action of the ciliary muscle is one of the most frequent and important causes of muscle imbalance. Moreover, the behavior of that muscle when acted on by small doses of atropin sulphate is often of considerable diagnostic value in showing whether there exists a tendency to excessive or to insufficient contraction.

This question as to the minimum dose of belladonna necessary to relax the accommodation of the average normal eye did not escape the notice of Kuyper (B 360, p. 587), although it is not clear how many "drops" were used. In order to obtain at least a few data bearing on the point I have used atropin sulphate in various doses on the eyes of thirty-one soldiers stationed at Fort Porter, Buffalo,[1] and a few other younger persons.

The eyes of each of these men had been carefully tested on entering the service. Each had vision equal to 6/6 and the ametropia present did not exceed 0.75. The men had all been practically free from asthenopic symptoms, and were otherwise in good health. At this point it is impossible to do more than to state very briefly that the results confirm in general the findings of Kuyper, and to add a summary of the observations concerning the behavior of the accommodation:

1. When 0.000005 to 0.00001 gram (about 1/10000 to 1/5000 grain) of atropin sulphate is applied to the conjunctiva, it is sufficient ordinarily to produce a relaxation of the accommodation (Fig. 125).
2. Although this relaxation begins in from 10 or 20 to 25 minutes, the full effect is not reached till more than an hour and a half after the application.
3. Within a few hours the effect begins to subside and has nearly disappeared by the second day.
4. The curve representing these changes in the accommodation varies somewhat in different persons with normal eyes, this depending on the susceptibility of the individual as a whole to the drug, and in pathologic conditions on the excessive or insufficient contraction of the ciliary muscle. Apparently the age of the individual is also a factor in determining the prompt or tardy action of this and of similar drugs, the irides of young persons seeming to respond more promptly to such stimuli than do those of middle or

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[1] See note and legends.

later life. We must conclude, therefore, that the amount mentioned may be considered, in general, the minimum dose which will produce distinct relaxation of the ciliary muscle. It happens that one or two of the manufacturers make an ophthalmic tablet containing 1/5000 of a grain. One of these or a half of one, therefore, represents a minimum dose.

It might perhaps be asked, Does this amount of atropin sulphate produce always the curves shown above? The answer to this, as a general proposition, evidently must be in the negative. As with any amount much less than the full dose the resultant curve tends to vary from the types given (Figs. 120 to 124), so are there many slight variations from the curve furnished by this minimum dose. Indeed, it is probable that no two eyes would give always exactly the same curve.

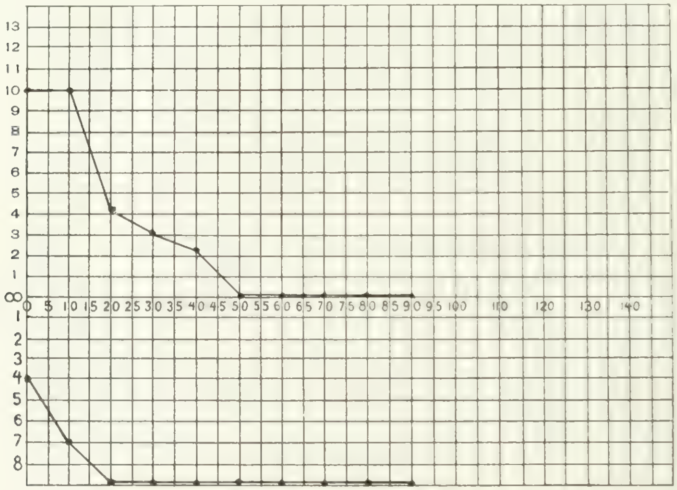

Fig. 127.—Immediate effect of a full dose of homatropin.

The individual variations in the forms of the curves may be due to two causes. One of these we call the "susceptibility" of the individual to the drug, and another depends on the condition of the ciliary muscle of the eye itself. The real fact is, however, that when we make tests with small amounts of atropin on normal eyes, although, as just stated, the details of these curves may vary somewhat, still, the gradual fall in the curve is so characteristic as to be recognized almost immediately.

It should be observed also that the susceptibility of the individual to the drug is in reality not a factor by any means as important as might be imagined. It is worthy of note in this connection that, although some practitioners are accustomed to use strong solutions of atropin, and often very carelessly in office work, still it is quite rarely that we see the constitutional symptoms of belladonna.

What Is the Practical Value of Minimum Doses of Atropin Sulphate?—They assist us in deciding whether the ciliary muscle is in a normal condition or whether it relaxes more or less readily than it should. In doing this we apply a given amount to the eye and then notice what the effect is on accommodation, and incidentally on the size of the pupil, observing both the time and the extent of the effect produced.

Let us suppose, for example, that we use a disc containing 0.000005 gram of atropin. The curve for this as it affects the accommodation has already been ascertained. If now we use the same on an asthenopic eye, and find that it takes a longer time for the relaxation of the accommodation to take place, that indicates that the ciliary muscle is in a state of abnormal contraction.

Or it may happen that after the application, the line indicating the relaxation, instead of being a curve, seems to drop suddenly and to an unusual extent. It is then fair to infer, other things being equal, that the ciliary muscle is more easily affected than in the normal condition, unless of course the individual be unusually susceptible to belladonna.

The Effect of a Full Dose of Homatropin.—It would be interesting in this connection to observe the effects of various drugs which have been used as cycloplegics, but that would necessitate too long a digression. It is worth while, however, to inquire as to the physiologic effect of homatropin. This is used so constantly, especially in America, as a cycloplegic and also as a mydriatic, that we might expect to find many exact measurements had been made to determine its physiologic action. Such, however, is not the case. Of the very few which are recorded, perhaps the most accurate are those of Straub (B 397).

But, as we ordinarily employ rather larger doses of the drug for clinical purposes than he used, it seemed worth while to note the effect of these on the normal ciliary muscle. Figure 127 shows the effect imediately after the application of a disc containing 1/50 of a grain (0.0013 gram) of homatropin hydrobromate to the eye of a boy 15 years old. From this curve it appears that the decrease in the range of accommodation begins in about ten minutes, and it is effaced decidedly sooner than with what we may call a full dose of atropin sulphate.

But the important point is, of course, that complete relaxation of the accommodation lasts a comparatively short time (Fig. 128). By the end of the third hour it is again apparent, and this increases so rapidly that by the end of the tenth hour after the application has been made the normal condition in this respect is almost restored. It should be mentioned, however, that in a considerable number of individuals, after the application of the same dose, a slight imperfection in the accommodation continues even until the third or fourth day. The dilatation of the pupil keeps pace with the changes in the accommodation, as will be seen by a glance at the curves. If the dose is much smaller than this, although the accommodation may relax promptly, that effect begins to disappear almost at once.

It should be remembered that, when either atropin or homatropin is used for clinical purposes, it is unnecessary to have the patient suffer the resulting inconvenience for as long a time as these curves would indicate. Instead of that, most practitioners then apply to the eye a small amount of eserin. We do not yet know what amount of this will counteract the effect of a given dose of atropin or homatropin. It is possible also that this double effect of drugs in an eye is a disadvantage to it. Any one who has tried this experiment on himself with rather strong doses can testify that the effect is, under some circumstances, exceedingly disagreeable. It is certain, however, that with a small dose of eserin it is possible to cut short very decidedly the effect of any of these cycloplegics, and if the dose of the myotic is small, the resulting discomfort is comparatively slight.

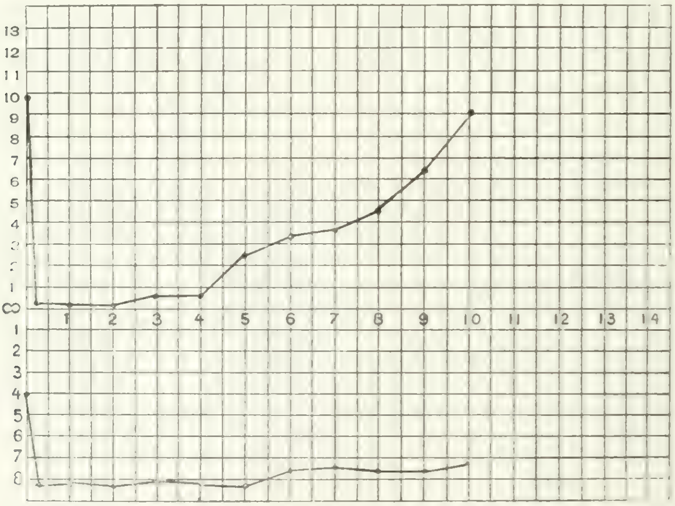

Fig. 128.—Effect ten hours after a full dose of homatropin.

What is the Diagnostic Value of Atropin Sulphate as Compared with Homatropin Hydrobromate?—In order to answer this question, let us understand first what the desiderata are for a cycloplegic, and then determine how well one or the other fulfills the conditions. It is generally admitted that we desire a drug—

1. Which is safe.

2. Which, under normal conditions, does really relax the accommodation.

3. Whose effects last long enough to make it reasonably certain that the examination of the refraction can be made during the period of relaxation.

4. Whose disagreeable effects pass off in the minimum time.

5. Which is inexpensive.

1. As to the question of safety, although atropin sulphate as used for this purpose can not be considered dangerous, still persons who have an idiosyncrasy in this respect are met with occasionally, and its effects are then so annoying that it must be admitted that homatropin hydrobromate is preferable from this point of view.

2. Atropin sulphate, even in minimum quantity, is apparently much more constant in its action on normal eyes than homatropin hydrobromate.

3. The effect of atropin persists for a much longer time than does that of homatropin. This renders it more certain that the tests are made when the accommodation is most relaxed, provided there be no fault in the accommodation.

4. On the other hand, atropin has the disadvantage that it gives a corresponding amount of inconvenience to the patient. When we remember, however, that the main object in the use of any such drug is usually to ascertain the condition of the refraction, it is apparently better to suffer annoyance from the drug a little longer than run the risk of having its effect insufficient. The fact is also, as just noted, that the effects of atropin and especially of homatropin can be counteracted somewhat by the use of a small amount of eserin. When we come to consider cases in which there is abnormal contraction of the ciliary muscle, we shall see that, if any spasm be present, a dose of homatropin which will entirely relax the accommodation of the normal eye is then insufficient.

5. As to economy, atropin sulphate is, of course, much the cheaper. While this is a matter of minor importance for many who come to a private office, it is not to be forgotten, especially when a drug is to be bought in considerable quantities for an institution. We may, therefore, conclude:

1. To determine the refraction as accurately as is possible at a single visit, it is best to use atropin about 0.0001 to 0.00026 gram (a disc of 1/500 or 1/250 grain).

2. To learn the condition of the accommodation, we should use atropin about 0.000005 to 0.00001 gram (a disc of 1/5000 grain) or a corresponding part of it.

3. When we are satisfied to know, perhaps approximately, the condition of the refraction without regard to the accommodation, about 0.0013 gram (1/50 grain) of homatropin is by far the most convenient.

4. As a mydriatic, homatropin is infinitely the better of the two. For that purpose a disc of 0.0001 gram (1/500 grain) is usually sufficient.

OPHTHALMIC SUBJECTS IN TALMUDIC LITERATURE.*

BY AARON BRAV, M.D.

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PHILADELPHIA.

As a collection of the writings of the ancient Hebrews, the Talmud furnishes some very interesting records to the student of medical history. The Talmud is the sum total of the ancient Hebrew literature written in the Arameic, Chaldeic and Hebrew languages. It is the non-systematized encyclopedia of the ancient culture land of Judea, dealing in particular with religious, social and civic questions. In the vast amount of learning gathered in the 36 volumes which comprise the Talmud, we find some very interesting data concerning the medical knowledge of the ancient Hebrews. We find in the Bible, the most reliable of the old records of human endeavor, many valuable hygienic measures as a preventive means against the spread of infection. We can not, however, compare the medicine of the ancient Judeans with those of other nations, so we must clearly differentiate between the medico-historic studies of Greece, for instance, from that of the Hebrew. From the Hebrews we have the Bible and at a later date the Talmud, but these works are primarily law books, being religious and social and refer to medicine only when some subject relative to law requires such information. In considering various laws of sexual purity the Talmudists are of necessity compelled to have recourse to the knowledge of obstetrics and gynecology of the time; so that we have rather an extensive discussion on menstruation as well as many pathologic conditions necessitating surgical interference. Cesarian section and hysterectomy are both mentioned in the Talmud. Hysterectomy, in the Talmud, however, refers only to animals; Dr. Tuduth states that "no cow ever leaves Alexandria, in Egypt, unless her uterus has been removed so as to prevent the reproduction of the same species in other countries."[1] The basis of Talmudic medicine may be given as follows: (a) Tradition; (b) medical ideas of Talmudic times; (c) Direct investigation by means of dissection; (d) personal investigation and observation; (e) experimentation and vivisection: (f) "Volksmedicin" or general popular practice.[2]

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* Read before the Dorshe-Daath Society, January, 1906.

Some of the Talmudic authors were evidently familiar with all the branches of medicine. Various diseases are discussed in the Talmud that have some bearing on the religious life of the community. For instance, a man having a certain disease or some physical abnormality is, according to biblical law, not qualified to minister to the people in the capacity of a priest.[3] Diseased and deformed animals were to be excluded from the sacrificial altar of the temple. These diseases had to be classified by the doctors of the Talmud and the curable had to be differentiated from the non-curable. In their decision the Talmudists did not rely on tradition alone, but often, and especially in doubtful cases, the medical expert, the "mumcha." was consulted and his decision was final.[4] Some of the Talmudists served for years in the capacity of shepherds in order to be able to observe various diseases of animals so as to intelligently differentiate certain diseases and exclude them from the Temple for sacrificial purposes.[5]

Of postmortem examinations for diagnostic purposes we find a few records, some on man, others on animals. I shall only cite a case of a sheep that dragged its hind legs, and Rabbi Yemar diagnosed the case as "Shigruna" hip-joint disease, while Rabina suspected a dissolution of the spinal cord as the cause of the paralysis; the sheep was killed and the diagnosis of spinal disease was confirmed.[6] In the study of embryology Samual did considerable experimentation. He examined hundreds of cases in various stages of embryonic life to determine the period when the sex could be differentiated.[7]

Talmudic medicine, however, can be thought of only in its relation to religious rites and from a medicolegal aspect. Medicine, as well as general knowledge, flourished in the ancient land of Judea, and the medical practice was not in the hands of the priest, except perhaps that part in direct relation to state medicine which had control of those contagious diseases requiring isolation. The medical man was an important factor in the old Jewish state. The Talmud forbade residing in a city in which there was no physician.[8] He was highly honored and universally respected by all. "Honor thy physician ere thou be in need of him," says a Talmudist.[9] As a rule, the art of healing was transmitted from father to son.[10] The physician took part in many of the religious questions necessitating deliberation on some medical point. That the Talmudists were familiar with the medical sciences of the time can be seen from the numerous medical aphorisms preserved in the literature. According to the Talmud, the physician must have received a comparatively large fee for his services. A common saying in the Talmud is, "A physician who takes nothing is worth nothing."[11] It is impossible to give a correct estimate of the knowledge of medicine of the ancient Hebrews, for neither the Bible nor the Talmud contain a medical treatise as such and medical subjects are treated of or alluded to only in so far as they serve to elucidate some point of law involving the science and art of healing.

In this essay I shall limit myself to references of diseases of the eye. The Mishna mentions one hundred and forty different diseases, which in the eyes of the law are considered bodily defects and, therefore, disqualify a man from performing any religious service in the Temple in the capacity of a priest, and among these are some eye diseases which are classified: (a) Eye defects and anomalies that disqualify the priest; (b) eye defects, anomalies and eye diseases that disqualify animals from the sacrificial altar of the Temple. Some eye injuries from a medicolegal standpoint are also considered.

The references of ophthalmic interest that I have been able to collect from the literature of the Talmud are of considerable interest from the historical point of view and give us a clear insight into the crude ophthalmic knowledge of that time. I shall in this paper endeavor to present to readers to whom the remarkable literature of the Talmud is a sealed book some idea on the anatomy, physiology, pathology, therapeutics and hygiene of the eye. Of course, many diseased conditions described in the Talmud are not very clear to us; this is perhaps due to the fact that we do not possess the proper meaning of some words, which may have undergone some change in the course of time, or perhaps due to the inability of the Talmudists to state the conditions correctly, but we can by a careful consideration of the subject fairly surmise the real nature of the conditions described. Some things, however, will have to remain somewhat obscure without, however, losing their historic value.

The eye in Talmudic language is called "Ayin," meaning "fountain or water well." By external appearance we differentiate the "Laban" white or sclera and the "Shachar" black or the cornea. The pupil is known as "Ishon," meaning "little man." Occasionally the pupil is spoken of as "Bath Ayin," or the "daughter of the eye." Sometimes it is called "Baba;" this term is somewhat similar to the English "baby." The Talmud also uses the word "Galgal" for the pupil, which means "round." Thus the Talmud says that the "Galgal," pupil, in man is round, while in animals it is oval, except in the snake, which also has a round pupil.[12] A congenital oval pupil in man is considered an anomaly of development.[13] By this anomaly we may understand coloboma of the iris. "Galgal," however, is also employed as the equivalent for the eyeball, so that in some legends the word must be translated bulbus and in others pupil. "This world is compared to the 'Galgal' eyeball, the white is the ocean encircling the earth, the black represents the earth, the iris within the black signifies Jerusalem, and the pupil within the iris is the Temple." The proper explanation of this rather beautiful parable is, just as the pupil is essential for the transmission of physical light so is the Temple necessary for the dissemination of spiritual light.[14] "Qumat" is the iris.

The eyeball is placed within the orbit—"Chor." The superciliary ridge which marks the upper boundary of the orbital cavity is known as "Gubbah," while the eye brow is called "Gibben." The eyelids are called "Afapajim." The eye lashes are spoken of as "Risa;" the word "Risa" is often employed to mean both the lid and the lash.

Of the science of embryology very little was known in those days; it is not surprising, therefore, that we only find one reference to the embryology of the eye, and this has more of a philosophic idea than a scientific basis. It is true that some of the Talmudists speak of embryologic investigations on pregnant woman slaves condemned by Cleopatra to determine the period of sexual differentiation; it is evident, however, that without a microscope the histologic elements could not be studied. In the development of the eye the Talmud speaks of three parts as compared to our three layers of the blastoderm, namely, Father, Mother and God. The father's sperm is white and from it develops the brain, bone, nails and the sclera of the eye; the mother's sperm is rather reddish and from it develops skin, muscle, blood and the black of the eye; God gives the power of understanding, sight, hearing, and thinking.[15]

The physiology of the eye was either not known or not discussed by the Talmudists. It is, however, stated that the eye is greatly influenced by age; visual acuity is reduced as age advances. The eye brows become heavier and more bushy. The Talmudists knew that vision is a psychic element, depending on the brain for interpretation, while the eye only receives the rays of light, and the sclera does not take part in the act of vision.[16] They were of the opinion, however, that some direct connection exists between the heart and the eye.[17] An interesting point of differentiation between man and animals, from a physiologic aspect, is stated in the Midrash, that man is "Meaded," meaning that his eyes are so placed that he can see round about him by means of ocular excursions without having to turn his head, so that while his eyes are directed in a parallel direction he can still see round about him, while the animal has to turn its head.[18] The lids serve for protection to the eyeball, and in the hen the lower lid in closing overlaps the upper.[19]

Considerable attention is given the lacrimal secretion as a physiologic fluid of the ocular appendages. The Talmud speaks of six kinds of tears, three of which are beautiful and useful and three are rather injurious. Tears caused by smoke and in defecating (due to diseases of the rectum), and, above all, tears caused by the loss of a dear child are injurious, while those caused by medications and collyria are "nice." The most beautiful and useful are those caused by laughter.[20] The tears are salty and may often cause pain when they fall on an excoriated skin when they will produce an eczema. When the enemy entered the Holy of Holies they tied the hands of the young men while the salty tears rolling down their cheeks caused a very painful vesicular eczema.[21] The theologic reason for the salty condition of the tears, which, by the way, is also good physiologic sense, is given in the Midrash, "If the tears were not salty a man when crying after the loss of a dear one would cry until he would become blind, but the salty tears call his attention to the impending danger."[22]

The etiology of various diseases of the eye, as well as of blindness, according to the Talmud, may be divided into two chief classes, namely, constitutional and local. The local causes are traumatic-chemical irritants or poisons. Direct injuries to the eyes with various instruments or injuries to the skull will cause many diseases and may even produce blindness.[23] Poisons from various insects not only destroy the eye, but may even give rise to serious constitutional conditions. Blindness and diseases of the eye may be caused by the corrosive action of the excrements of the swallow when mixed with the salts of Sodom in the preparation of ocular cosmetics. The blood of a young ass rubbed into the scalp as a therapeutic measure against jaundice may cause sore eyes; the blood of a young cock used for headaches was considered very dangerous to the eye, "one drop of it in the eye will cause blindness."[24] Hemorrhoids often give rise to ocular diseases.[25] "Bulimia"—sudden hunger—is mentioned as a cause of severe eye conditions. Bulimia is a disease spoken of as very dangerous to the eye; in fact, it causes temporary blindness, and the return of sight is of good prognostic value.[26] Neglect in the proper care of the hair of the scalp, an unnatural growth of hair so that more than one hair comes from one follicle are considered potent factors in the causation of diseases of the eye.[27]

Carelessness is very often responsible for blindness. Rabbi Jose says: "Three things cause blindness—combing the hair when it is dry, drinking wine when it is dribbling down the barrel, and putting on the shoes while the feet are wet."[28] Of course, this is only given as an expression of carelessness. Certain herbs have been known to cause eye trouble. It is said that the ass of Rabbi Janai while feeding on some grass became suddenly blind—the name of the grass is not given. An interesting story is told of a blind man, accompanied by a seeing man, while on their way to Tiberia, indulged in some herbs in a meadow and, lo, the blind man regained his vision while the well man became blind.[29] Friedman suggests the possibility of a mydriatic principle to account for the strange effect, the blind man having suffered from a central opacity of the cornea or lens, the dilatation of the pupil enabled him to see through the clear periphery.[30]

The Talmudists have recognized constitutional weakness as a causal factor. "Fear, anger and sorrow will give rise to serious ocular diseases."[31] Weeping is considered a very important factor in the etiology of diseases of the eye and may cause blindness. Rabbi Chaninas' daughter died and he did not weep over her death. "Was a hen carried out of the house?" asked his wife. "Is it not sufficient that my child died? Wouldst thou have me lose my eyesight through weeping?" replied the Rabbi. "Losing children and getting blind go hand in hand."[32] Especially is weeping responsible for loss of eye lashes. "After weeping the eye gets dim," said Samuel. "Up to the age of 40 a man whose eyes became dim through weeping may yet be restored by different remedies, beyond that age there is no remedy for them."[33] There is a very clear reference to glaucoma in this ophthalmic rule enunciated by the learned Samuel. In this connection it is well to point to the fact that the majority of glaucomatous patients in our clinics to-day attribute the origin of their disease to excessive weeping.

Excessive copulation is considered an important factor in the reduction of visual acuity. "The seed of copulation forms . . . the light of his eyes; he who abandons himself to his passion, his eyes grow dim and the cilia of his eyebrows and eye lashes fall out."[34] Smoke is very injurious to the eyes. "Smoke to the eye is like acid to the teeth."[35] Dark habitations cause nystagmus. "The inhabitants of Mechusa, on the Tigris, suffer with nystagmus because they dwell in dark houses; they suffocate without light and bath."[36] Nystagmus is also said to be congenital and caused by the diet of the mother during pregnancy. A pregnant woman eating "Mnuni," a certain kind of small fishes, will give birth to a child with nystagmic eyes.[37] Heredity and maternal impressions both are considered potent factors in the causation of malformations.[38] Contaminated atmosphere and sandy regions are responsible for certain eye diseases. Hillel, the elder, when asked, "Why do the Palmyrians so often suffer with eye diseases?" answered, "Because they live in sandy regions."[39]

Some causes of blindness are of a superstitious character, i. e., caused by demons. Sabriry is the name of the demon causing night blindness. The equivalent term for night blindness is "Sabriry-Delayla," or the demon of the night. His habitation is in the water, his power is especially in the night, and he is apt to cause blindness in people drinking water in the night from a stream without examining it.[40] Later two Sabriries were considered Sabriry Delayla (nyctalopia) and Sabriry Dejamama (hemeralopia).[41] Another kind of blindness is caused by the demon Bath Melech. The habitat of this princess is on the finger tips; unclean hands, therefore, is a cause of eye diseases. The Rabbis teach that the hands that touch the eye without being washed should be cut off. Hirschberg adds to this saying: "Auf meinen reisen habe ich viele hande gesehen die nach Rabbi Hunna abgehauen zu werden verdienten."[42] He who touches his eyes with his hands without washing them three times deprives himself of his eyesight.[43] The general abnormalities and diseases which will exclude men and animals from the Temple are classified in the Talmud in four categories, namely, (1) Kahajutha or "blindness." This includes all conditions that eventually lead to total blindness.

(2) Machsorajatha or "reduction." This includes all conditions that reduce visual acuity, but never result in total blindness.

(3) Mabalbalitha or "confusion." This includes all haziness and conditions giving rise to disturbances in color sensations or that white and black are confused.

(4) Mishnojatha or "double," also "changed." This includes all kinds of disturbances of the external muscles of the eye and deviations of the visual axis, causing double vision, as well as all kinds of malpositions and defective developments.[44]

In considering the pathologic conditions of the eye as noted in the Talmud, one must bear in mind the fact that the Talmud is not a text-book on ophthalmology and treats only of those conditions which in men disqualifying them from the priesthood and in animals from the sacrificial altar. Again, some of the diseases are mentioned for which the Sabbath may be violated because of the danger of the progress of the disease if left without treatment. When we come to consider the pathologic conditions of the eye as referred to in the Mishna and Talmud we must also bear in mind the fact that the Mishna was compiled about 200 C. E. and the Talmud was compiled about four hundred years after the rise of Christianity, surely not an era of ophthalmic progress, so that intraocular conditions, such as neuritis, chorioiditis, optic atrophy, were only surmised, but never diagnosed; we find no direct reference, therefore, to these conditions, only those accessible to the naked eye being discussed in the Talmud. We shall first mention those conditions of the eye which were considered a blemish—a bodily defect—and, therefore, disqualified both men and animals from the Temple.

Some diseases are spoken of as transitory, others as permanent. A disease that is curable within the limit of a certain time is described as transitory. In some diseases the time limit is 30 days, in others it is 80 days. A disease that will not yield to any treatment within the limited time is considered permanent.

The following lesions are discussed: Dok "veiled," most probably corresponding to our nebula. Two kinds are recognized—the permanent and the transitory. The transitory is curable within 30 days. Dok reduces the visual acuity, but does not produce blindness. The permanent Dok is of a darker color than the transitory, for which reason the permanent is also called Black Dok.[45] All animals that have a Dok must be examined and treated for 30 days; if no improvement is noticed within this time the condition is considered a blemish.[46]

Teballul or "Mixture." The white of the eye invading the black.[47] The condition is described as a piece of tissue coming from the "Laban" white part of sclera passing over the "Sira" corneoscleral junction and over the "Shachar" black or cornea.[48] This is a very clear description of a pterygium.

Jabeleth or "wart." Two kinds of Jabeleth are given, one containing hair and nails or the hairy and the non-hairy. A Jabeleth may occur in any part of the body, but when occurring in the eye it is considered a blemish. It is evident from the above statement that the condition referred to is a cyst, simple or dermoid.[49]

Chawarwar or "white spots." Two kinds of Chawarwar are distinguished—the transitory and the permanent. A transitory Chawarwar is curable within 80 days, during which time the eye must be examined three times, as it is the nature of the disease to come and go.[50] It is fair to assume that some corneal condition is meant by the above description, perhaps of the interstitial variety.

Majim-Hakobia or "steady water" is spoken of as an incurable disease, leading, as does also Chawarwar, to total blindness. The word as translated means steady or permanent water to distinguish it from the transitory variety. A test is described in the Talmud which is based on dietetic principles in causing an absorption of the water. Lacrimation in these cases was considered a good sign, for by that means it was taught that the water would be eliminated.[51] It is questionable whether the real nature of the condition mentioned above is glaucoma or cataract. The ancients, as we know, considered the cause of cataract to be in the fact that some water passed by means of the optic tract or optic nerve into the eyeball settling in front of the lens and thus occluding vision; in fact, the term cataract has its origin in that theory. It is, however, possible to think of glaucoma by linking the word of "Majim Hakobia" or "steady waters" to the Greek hydrophthalmus. It is of interest to know in this connection that once the diagnosis was confirmed the condition was considered incurable, leading to total blindness.

Barkith, meaning "white shining," when a white substance is seen through the black. Cataract is most probably meant by this term. Barkith is curable in the incipient, but is incurable in the advanced stage.[52]

Jarud is another disease causing blindness. As no definition is given under this term, we may understand conditions not demonstrable to the naked eye.[53]

Chaloson Nachash. The two terms mean in reality one thing. It is highly probable that Chaloson was the scientific, while Nachash was the popular term. Rabbi Jochanan tells that "he once met an old wise man who showed him a first-born animal with a Chaloson on its eye, and he remarked this is what the Talmudists call Nachash."[54] The word Chaloson evidently was taken from the Greek word chalazion, and some lesion of the Meibomian gland is to be understood.

Enabatha. A "berry-like excrescence." This is a malignant eye affection leading to fatal issue, especially the black Enabatha.[55] Here we must think of a malignant tumor or the condition known as malignant pustule. The conditions above mentioned refer to both animals and man.

In addition the following conditions are mentioned that exclude a man from the priesthood:

Gibben or "ablepharia." There may be an absence of one or both eye brows, which in man was considered a blemish.[56]

Timur is a condition in which the eye lashes are absent. Two kinds are mentioned: (a) Absence of lashes while the roots are still present; (b) absence of both lashes and roots.[57]

Sachbenu, meaning "drooping." This is a condition described as lowering of the lids and the hanging down of the cilia. It is spoken of as a disease of the aged. It is said of Rabbi Jochanan, when he became old, his gabinim were hanging down and interfered with his vision, and he asked his disciples, "Lift my eyes that I can see," and his eyes were lifted with a silver Machkalta.[58] The word gabinim here evidently refers to the eyelids, as it is not likely that the eye brows should assume such proportion as to interfere with vision, especially when they could be trimmed. Here evidently we deal with a ptosis, a drooping of the lid, which could only be relieved by elevating the lids. The Machkalta was evidently a ptosis instrument.

Lacrimation was considered a disease entity. Three degrees are mentioned: (a) "Domoth" or lacrimation; (b) "Tordoth" or epiphora; (c) "Dolphoth," evidently chronic blennorrhea.[59] The lacrimal passage was evidently known to the Talmudists, as constitutional poisoning by local application of drugs is discussed by them, and some Talmudists state that the drug, going down the nose into the throat, is eliminated by that channel.[60]

To the fourth classification, "Mishnojatha," the following conditions belong:

(a) Microphthalmus. There is no special term for this condition. The Talmud simply describes the condition by saying "when both eyes are as small as a goose eye."[61]

(b) Macrophthalmus, when the eyes are as big as calf eyes, a somewhat similar term to buphthalmus.[62]

(c) "Zugdum." Under this term we include all kinds of unequal eyes—one eye large, the other small; one pupil large, the other small; one brow white, the other black.[63]

(d) "Luphin" is described as a form of symblepharon.[64]

(e) "Nud," nystagmus, a constant movement of the eyeball, which, according to the Talmud, may be either congenital or acquired.[65]

The following conditions are also mentioned without giving any special term:

(a) When both eyes are placed too high, kataphoria.

(b) When both eyes being placed too low, antropia.

(c) One eye being higher than the other, hypertropia.

(d) One eye turned down, the other turned up.

Strabismus is expressed in the following manner, "when one speaks to a man while one of his eyes is directed to another." Another way of expressing it, "when a man can see the house and the cellar at the same time."[63] They evidently were of the opinion that in cases of squint both eyes see the object toward which the visual axis is directed.

Of the active inflammatory conditions of the eye, only those are mentioned for which the Sabbath may and should be violated. This law was made by Samuel as a result of an accident in his family. The maid of Samuel suffered from an acute inflammatory condition of the eye on a Sabbath day. She asked for treatment, but none was given her, so her eye bursted. The next day Samuel declared that all acute inflammations of the eye should be treated on a Sabbath day.[67] The accident above mentioned was most probably an acute ulcerative condition of the cornea, which perforated. The following acute inflammatory conditions are mentioned for which the Sabbath should be violated:

(a) Rira, meaning "pus" or suppuration, including all acute suppurative conditions.[68]

(b) Dica, meaning "sticking pain," including all conditions with sharp pain.[69]

(c) Dama, "blood," includes all hemorrhagic conditions.[70]

(d) Gidcha, "burning." This includes, of course, all inflammatory conditions.[71]

While at present these conditions are considered only as symptoms, they were thought by the Talmudists to be disease entities.

Sachi-Shemesh, or "sun hatred" (photophobia) is also mentioned as a disease condition.[72]

Trutoth, a condition translated to mean granular conjunctivitis, and common among the Palmyrians.[73]

Ophthalmia neonatorum is not mentioned directly, but we find a law to the fact that a child suffering with eye disease should not be circumcised on the eighth day, but the performance of the rite should be postponed until the child has completely recovered.[74] The soundness of this hygienic measure is, indeed, highly commendable. Most cases of ophthalmia in the new born are of gonorrheal origin and any operative procedure would be dangerous.

Sabriry Delayla, or night blindness, and Sabriry Dejamama, or day blindness, are both mentioned as diseases caused by some demons. It is highly possible that the origin of the demon theory developed on account of the negative external lesion to account for the symptom. An ophthalmoscopic examination in those cases might have revealed a pigmentary degeneration of the retina and drive the demon out of fashion. Of course, there are no explanations given on these various pathologic conditions, as the reference to them in the Talmud is not from a medical point of view. There are references to ectropion, entropion, blepharitis, conditions ascribed to excessive weeping and which were considered as a blemish in a priest, as the priest was supposed to have been an attractive man.

THE THERAPEUTICS OF THE TALMUD.

In considering the therapeutics of the Talmud it is well to state that there were among the Hebrews of ancient times two kinds of practitioners, namely, the scientific physician and the charmer. The latter were mostly women. Of course, the title "Rophe," or physician, implies the rational healer whose advice in Talmudic literature is considered authentic. The specialist is called "Mumcha" or "Rophe-Mumcha." In some instances their therapy was peculiar. For example, for a bite of a rabid dog the profession used the extract of the liver of the dog as an antidote to rabies. In a discussion as to whether a man bitten by a rabid dog on the Day of Atonement is permitted to partake of the extract, some Talmudists on the negative side say: "It is true that the profession is employing the extract. but it has not been proven to have a positive preventive effect."[75]

The charmers were tolerated, but were not permitted to practice on a Sabbath day, a privilege granted to the regular physicians. The physician had to have a license from the city council.[76]

The treatment of diseases of the eye as found indirectly discussed in the Talmud is of two kinds—those employed by the profession and those used by the charmers and the general popular practice. The medical therapeutics may be divided into hygienic and curative.

OCULAR HYGIENE.

The hygienic rules for the preservation of sight and prevention of diseases of the eye found scattered in the Talmud and collected by Maimonidies are sufficient evidence of the advanced standing of the ancient Hebrews in the knowledge of preventive medicine. To preserve the sense of sight, one should guard against the following: Not to go from a dark to a very light room or place, or the opposite. for the change from dark to light, or *vice versa,* is very injurious to the visual nerve. Therefore, the eye should gradually become accustomed to the change. Light reflected by the sun is also injurious to the visual apparatus, i. e., the light radiating from a place on which the sun shines affects the eye sight. One should be careful not to strain his eyes in the dimness of twilight, in the sunshine of midday or at night by a candle light, and should not look steadily at white or bright red color nor at a fire. Smoke and sulphurous odors are injurious to the eye, so is also excessive walking, a rapid gait and copious weeping, and it is well to guard against them.

Excessive copulation injures the eye more than anything else. "The seed of copulation forms the strength of the body, the life of the man and the light of his eyes. Consequently excessive seminal emission will cause the body to waste away by sapping its strength and destroying its vitality." King Solomon, in his wisdom, has also inculcated this principle in the admonition, "Give not thy strength to women."[77] He who abandons himself to his passion for copulation grows aged before his time, his strength abandons him, his eyes grow dim, an offensive odor emanates from his mouth and is exuded from his arm pits. It also causes the loss of hair of the head, as well as of the eye brows and eye lashes, and is productive of an abnormal growth of hair on the face, also on the extremities of the body. It also causes the falling out of the teeth and subjects him to many other diseases. It was asserted by the most eminent physicians that one of a thousand succumb to other diseases, the balance being the victims of excessive copulation. It, therefore, behooves him who has a regard for his welfare to exercise the most care in this matter.[78]

Clean hands are important in the prevention of ocular diseases. Rabbi Nahum used to say the eye is like a princess, and it hurts to be touched by hands that have not been washed three times.[79] Washing the hands three times in the morning is a hygienic rule of the Jewish religion. Rabbi Muna used to say as soon as a man rises and his hand touches his eye without being washed it had better be cut off. The same should be done with the hand that touches a pitcher of beer before it had been washed, because such a hand causes blindness.[80] It is also essential that one should wash his hands after meals as a precaution against diseases of the eye,[81] for the salt of Sodom used is very injurious to the eye and may even cause blindness. Rest is an important element in the treatment of inflammatory conditions of the eye. Talking is forbidden during the inflammatory stage, and no visitors are allowed to disturb the patient.[82]

THERAPEUTICS.

Some dietetic rules are discussed in the Talmud which have considerable value from a hygienic standpoint in the treatment of various diseases of the eye. Pregnant women were forbidden certain foods because of the injurious influence on the child's eye. Dietetics are crudely spoken of in the Talmud: Thardin or Mangold was considered healthy, provided it was well cooked. Figs have a good influence on the eyes. Asparagus is good for the heart and for the eyes.[83] Honey, when taken after meals, has a very good effect on the eyes, but is injurious when taken before meals.[84] White bread, fat meat and old wine increase the visual acuity, while rye bread, fresh beer and raw cabbage are injurious and reduce 1/500 of the visual acuity.[85] Goose lung was considered of special dietetic and therapeutic value, so much so that the price of the lung was three times that of the goose. According to Rabbi Jose, the lung was dried and medicated, but very few knew how to prepare it.[86] A certain kind of fish is injurious in the early stages of acute inflammatory conditions, but fish in general is very useful in the convalescing stage.[87] The Babylonian "Kutach" was considered very dangerous to the eye. This was a preserve made of sour milk bread crusts and the salt of Sodom. The danger was in the salt, as it was able to produce blindness.[88]

Active treatment consisted of local applications and internal medication. For external application fluids, salves and pastes were used. The therapeutic value of a few herbs are discussed, but only indirectly. Kusbartha or Oleander is spoken of as a very useful remedy in ophthalmic therapy. In discussing the value of this drug, some Talmudists declare it not only not useful, but claim that it reduces the visual acuity. "Even I who am gifted with good eyes am affected by the use of this drug," says Rabbi Huni.[89] Oleander produces this effect when used both locally or taken internally. The Tosephta, however, explains that while it is true that it reduces vision it has a soothing and curative influence on all inflammatory conditions.[90] The reduction in visual acuity resulting from the employment of the drug is due to its mydriatic principle.

Another much employed drug is "Gargira", or Eruca Sativa, which is said to increase the acuity of vision. "I have always been benefited by its use," says the blind Rabbi Sheshes.[91]

Samuel was considered the best ophthalmologist. He says, "All eye lotions that have a curative effect also reduce visual acuity, except water, which cures without any untoward symptoms."[92] The eye lotion or "Cholron" of Samuel was widely known and generally employed. His reputation extended beyond the boundaries of his land. Samuel himself, however, considered cold water as an eye wash and daily bathing of the hand and feet of more value than all the collyria. Rabbi Yanai of Babylon sent a request to Mar Ukba of Palestine: "Let Master send me the eye lotion prescribed by Samuel for inflamed eyes." Mar Ukba answered: "I send to you the cholron of Samuel that you do not think me parsimonious, but Samuel said that 'bathing the eye in cold water in the morning and bathing hands and feet in warm water in the evening' is better than all collyria in the world."[93] Wine was considered an important remedy, especially wine-soaked bread, and used as a local compress.[94]

Sputum was extensively used by the populace. The Egyptians used sputum in many diseases of the eye. The Hebrews considered the sputum of a man who did not break his fast and the sputum of a great man or of a first born of special value. The saliva of a temperance man, however, was considered best.[95] The therapeutic value of saliva is mentioned in the New Testament.[96] It is to be regretted that sputum is still largely used by the ignorant in many countries. Puch is mentioned as a very popular ointment and was extensively used, especially in cases of excessive lacrimation and chronic blepharitis with marked loss of the cilia. Its physiologic action is to dry the secretion and it also stimulates the growth of hair.[97] The constituents of this ointment are not given. Kechol is another important eye lotion in the treatment of various diseases.[98] Rabbi Nachman says: "Kechol brightens the eye and is only useful up to the age of 40. After that age, however, it may preserve the eye, but has no special curative effect."[98]

Cataract in the advanced is incurable, but is curable in the incipient stage. The following treatment is given for the incipient stage: The skin of a scorpion having seven different colors is dried and powdered. Mix one part of this powder with three parts of Kechol and instill three drops of the mixture in the eye. Care must be taken, however, not to instill more, as the eye may burst."[99] Sama was a drug not very frequently used on account of its poisonous effect. It had a very penetrating odor. It is told by Samuel, who was the physician to Rab, that once Rab's eyes were inflamed, and Samuel suggested the instillation of Sama. "Let me apply it externally," but Rab refused. So Samuel placed the drug under his pillow and he got better.[100] Mother's milk, the white of an egg and the blood of various animals were much employed in the treatment of ocular diseases.

I found no record of any surgical procedure as a therapeutic measure in the Talmud, i. e., ophthalmic surgery, I have, however, noticed references to enucleation and to artificial eye-balls.[101] Incantation and charms were used by the people in many disease conditions. In night and day blindness it was very popular. Some of the Talmudists have forbidden this practice, others have permitted it.[102] The exact nature of the various drugs mentioned in the Talmud is not familiar to us, nor have we any true conception of the constituents of the preparations. No mention is made in the Talmud about far or nearsightedness, weak eyes included, all possible errors of refraction. Some points of considerable interest may be found in the Talmud on the medico-legal aspect of ophthalmology to which, however, I shall devote my time and attention in a subsequent paper.

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80. Ibid.
81. Ibid.
82. Nidda 41—a B. T.
83. Berochoth 51—a B. T.
84. Joma 38—b B. T.
85. Pesachim 42—a B. T.
86. Chulin 49—a B. T.
87. Nedarin 54—a B. T.
88. Pesachim 42—a B. T.
89. Sabbath 109—a B. T.
90. Tosephta Sabbath 109—a B. T.
91. Ibid.
92. Sabbath 78—a B. T.
93. Sabbath 108—b B. T.
94. Sabbath.
95. Sabbath. 223 B. T.
96. John 9—6; Mark 823.
97. Nedarim 1x—8 f 27—a P. T.
98. Sabbath 151—b B. T.
99. Gittin 69—a B. T.
100. Baba Mecia 85—b B. T.
101. Nidda P. T.
102. Sanhedrin 101—a B. T.

MONOCULAR VISIBLE SPASM OF THE CENTRAL ARTERY OF THE RETINA; A CASE.*

D. F. Harbridge, M.D.

PHILADELPHIA.

The occurrence of transient monocular blindness is unusual, and the opportunity of repeatedly observing the cause and the phenomena accompanying this alarming symptom is almost unique.

It has been my good fortune not only to see such a case, but of having the pleasure of my observations being confirmed by several fellows of this body.

The history of the case is as follows:

On the 27th day of November, 1905, Mr. C., aged 49, grocery man, came to me in a highly excited state of mind, with the statement that since the morning of the day previous he has had numerous attacks of absolute blindness in the left eye, which has lasted a varying period of time from one to five minutes, these attacks having recurred about every two hours during the day; on the day upon which he first visited me they recurred on an average of every forty minutes. He states that the on-coming of an attack is heralded by slight premonitory symptoms of supraorbital pain and twitching inside the eye; this is shortly followed by the sight beginning to leave, which invariably takes place to the nasal side of the field and affords the sensation of a thin veil gradually being drawn before the sight; this becomes denser and denser until vision is absolutely lost, the loss of vision lasting from one to five or six minutes, when it gradually returns, always to the temporal side of the field and with a peculiar play of lights, phosphenes—or, as the patient describes it, "sunlight on a tree hung with icicles or the flashes of light from a picture machine."

The first attack came on while in the act of bending over to get some apples out of a barrel; all subsequent attacks practically followed any movement requiring a bending position. Following these attacks there remains for a time supraorbital and deep orbital pain or tenderness, but not of a very marked degree.

Examination revealed the following: V. O. D. 6/xv (since improved 6/ix), V. O. S. 6/vi (affected eye), P. 2½ mm. Exophoria for distance, 3° ; the irides react to light and accommodation; arcus senilus is present all around; movements of the eye good in all directions.

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* Read before the Section on Ophthalmology, College of Physicians, Philadelphia.

Ophthalmoscopically—O. D. small opacity on posterior capsule of the lens, rest of media clear, D. H. O. deep central excavation, narrow atrophic conus out pigment beyond, C. T. R. in, this border slightly hazy, the upper and lower edges veiled, the D. appeared slightly redder than normal and slightly swollen, particularly the lower portion, the veins slightly distended, no marked evidence of sclerosis.

O. S. M. C. D. nearly R. narrow atrophic conus down and out C. T. and trace of pigment in, spot of pigment on the D. near the outer edge, upper and lower edge veiled, arteries and veins normal in size, no marked evidence of sclerosis, D. normal in color, or at most only slightly grayer than usual.

No sooner had the patient been properly placed before the perimeter than he remarked to me that an attack was about to come on. I hastily took him into my dark room and during the next four minutes witnessed most unusual phenomena in the left eye. I observed the pupil dilated about 2/3 and in the eye ground the inferior temporal artery gradually become lessened in caliber until completely collapsed, and as far as I have been able to observe this was rapidly followed by the inferior nasal and superior arteries undergoing the same change; following quickly upon the arterial change, the veins, beginning with the inferior, underwent a similar process. The entire retinal circulation looking very much like ribbons up against the fundus, the head of the nerve became pallid, more marked around the periphery, particularly at the upper and lower borders, its position could be made out and the collapsed vessels distinctly observed overlying the nerve; the retina became somewhat hazy. After the fundus remained in this condition four minutes, gradually the inferior arteries began to fill quickly, followed by the others, immediately the veins began to fill, first the inferior, followed by the superior, the inferior becoming enormously distended. Sight did not return synchronously with the filling of the vessels, but followed immediately after, while the pupil was still dilated. Following the attack, hippus was noted.

After having observed this most unusual condition, I looked for a possible explanation in a more accurate history of my patient. This proved to be of an interesting character and in quite a measure misleading.

Family History.—Father died of Miner's consumption; mother living and well; three brothers and ten sisters; one brother died by partaking of poisoned food (entire family poisoned); one brother and one sister died of consumption; no neurotic history developed.

Personal History.—Patient lost right hand thirty-six years ago, it having been caught in a machine; 1898 had attacks of vertigo, possibly as often as twice a week, these attacks lasting over a period of one year. Preceding an attack he had the premonitory symptom of dull frontal headache. If at this time he would lie down and remain perfectly quiet with his eyes closed, they would pass off, but, as he expressed it, if he should observe any moving object, for example a worm moving, he would pitch forward.

Following these attacks of vertigo, he has been subject to severe migraine, possibly once a month or once in six weeks, so severe as to compel him to lie down for the day. The last such attack occurred one week previous to his visit to my office.

In 1902 he was thrown out of his wagon, injuring his right side and producing a right inguinal hernia.

On March 10, 1904, he claims to have had an attack of inflammatory rheumatism, preceded two or three days by a dull aching pain in the hips and legs. This was followed by a period of delirium lasting until May 30, 1904. At the beginning of this illness he remembers observing mice running across the ceiling. At the onset of this illness he weighed 210 pounds. Following it his weight was 135 pounds. For some time afterward he had a burning pain in the back, with an eruption which itched slightly. He was treated by several physicians without success, but was immediately cured by the suggestion of a negress that he rub the parts with salt and rain water and wear a silk cord around his abdomen. This he still wears. Dr. Long, his physician during this illness, states that he treated him for bronchopneumonia, followed by an attack of rheumatism. During the course of the pneumonia he was delirious two or three weeks. Since this illness he has had absolute loss of sexual power. For the past ten years he has had a cough, with very slight expectoration, and associated with a mild asthmatic condition. He now weighs 180 pounds. The patient is the father of five children, three of whom are living and healthy; one met an accidental death; one died of diphtheria. He smokes three cigars a day, chews half an ounce of tobacco a day, swallowing the juice. He states that he never used alcohol to excess, and none at all in the past twenty-nine years; denies venereal infection. These last two statements are positively refuted by Dr. J. L. Forwood, of Chester, his family physician, who has known him for upward of forty years. Dr. Forwood states that the patient was an excessive user of alcohol up until the time of the accident in 1902, and also that he contracted syphilis nine years ago while away from his family.

The patient was referred to Dr. W. B. Stanton for an examination of his vascular system. Dr. Stanton reports that he found nothing abnormal. There is no lung, kidney or heart lesion. The action of the heart is regular. A very slight degree of sclerosis of the vessels is present. High tension is normal, low tension a trifle lower than normal. Nothing was found that would indicate endarteritis or a forming thrombosis or an embolus. The patient was referred for neurologic examination to Dr. D. J. McCarthy. Dr. McCarthy reports as follows:

"The diminution—almost complete absence—of left knee jerk, the diminution—almost absence—of pharyngeal reflex on the left side with a sluggish reaction of pupils and complete loss of sexual power in a man who has had syphilis, is suggestive of beginning tabes. I could find no sensory disturbance except some slight anesthesia of the right conjunctiva, which I do not consider of much importance. There are several possibilities in the case, as I see it, that the headaches are types of migraine, and his present condition is a manifestation of vasomotor disturbance, probably of cortical origin, and which frequently accompanies this condition. While I do not know such a condition in tabes, I should think it would be possible. I might add that there was a decided lessening of the reflex irritability in the distribution of the ninth and tenth nerves of the left side, especially in the region of the larynx and pharynx. A cyst or aneurysm at the base of the brain would most probably give optic nerve changes. I should undoubtedly consider the case an organic one, and do not think it of a purely functional nature. I have nothing to suggest in the case, except that I would cut off the tobacco and, on the assumption that it is beginning tabes, give him mixed treatment."

Treatment.—The patient was requested to remain quiet, avoiding all unusual exercise. He was given nitroglycerin, gr. 1/100, and K. I. in increasing doses three times a day. To the latter drug was added bichlorid of mercury, gr. 1/24. The attacks continued with more or less frequency up until noon on Dec. 6, 1905. Shortly after this last attack he was given a thorough purging with salines. At present (May, 1906) both optic nerves are gray, that of O. D. being the more discolored. The arteries are slightly contracted. In O. S. the veins are somewhat dilated. No evidence of arteriosclerosis. V. = 6/vi.

In such a case as this our views in regard to the etiologic factors must be somewhat speculative. What is so frequently referred to as embolus of the retinal arteries does not seem to me to be a factor in this case, the attacks being of too short duration and the return of vision too complete.

Inflammatory exudate into the sheath of the nerve might be mentioned; but there hardly appears to be sufficient evidence of an inflammation to warrant any such conclusion; besides, the veins would remain more or less distended.

The condition of spasm of the central artery may be due to *vasomotor* disturbance of a reflex character, possibly associated with the attacks of migraine and localized in the eye. The prompting factor may be intestinal toxemia, for, after having been purged, there has been no recurrence.

It may be the forerunner of a beginning thrombus due to changes in the vessel walls. Still, the condition of the retinal vessels and an examination of his general vascular system hardly seems to afford sufficient reason to be firm in one's opinion that a thrombus is at the present time really forming. However, knowing the patient's personal history, it does seem to me that, whatever the real primary factor may be, if the condition continues, changes in the retina are likely to take place, resulting in the formation of a thrombus, with its consequent permanent injury to vision.

Wagenmann, in 1897, reported a case in which he had an opportunity of studying the eye ground during an attack of spasm of the retinal artery which lasted ten minutes. This was followed by a subsequent attack which resulted in permanent injury to vision by the formation of a thrombus. In this case there was marked evidence of arteriosclerosis and also a heart lesion.

Benson, in 1894, reported a case in which he observed an embolus lodge in one of the branches of the retinal artery, causing destruction to the parts supplied.

Discussion.—Dr. Posey recalled some cases of transient monocular blindness reported by him some time before, but he had not seen any of them during an attack. Since the published report, two of the patients had died from vascular changes. He thought the prognosis should be guarded. If the patient did not lose vision because of the spasm it was likely that a thrombus would be formed later. He advised iridectomy if the attacks could not be controlled by other means.

Dr. Zentmayer stated that he had had the privilege of seeing this instructive case during three attacks. What he had seen differed in no important particulars from the description given by Dr.

Harbridge except that in the last attack, which was one of a long preceding series, there was some edema about the lower outer disc margin. He said that when we consider that even histologically it is difficult to determine whether the obstruction has been due to a thrombus or to an embolus, owing probably to the long period which usually elapses between the time of the occurrence of the obstruction and the necessity for enucleation, we realize how important is every clinical observation which will help to decide this disputed point. Should this case finally develop the typical picture of permanent obstruction, and he believed that it would, it would strengthen the position of those who contend that thrombosis is the most frequent condition, as spasm itself, while incapable of producing the ophthalmoscopic picture which we see in permanent obstruction, can be the cause of a thrombus forming. The spasm may produce it or it may arise from endarteritis. Cases of monocular transient blindness are, no doubt, usually analogous in origin to this case. In Noyes' case the blindness lasted 16 hours, but normal vision was recovered. As to the value of iridectomy, in Wagenmann's case blindness resulted from thrombosis, notwithstanding that this operation had been performed.

Dr. de Schweinitz said that he had had the opportunity of examining this patient during an attack of blindness, and had witnessed the phenomena which had been described by the reporter. This retinal circulation resembled somewhat, at the height of the attack, the thread-like vessels seen in advanced cases of pigmentary degeneration of the retina, or those that could be produced by various toxic agents which cause an intense ischemia, notably quinin in large doses, as he himself had frequently seen in experimental work. He had been unable during the attack, which lasted five minutes, to detect any edema of the retina, but had watched the refillings of the vessels and the unusual enlargement first of the inferior veins. During this attack there were no notable changes in the opposite eye. Dr. de Schweinitz also referred to a case of so-called embolism of the left central artery of the retina, in which he had had the opportunity of making ophthalmoscopic examinations twenty minutes after the obstruction occurred. These phenomena were evident: The color of the disc was visible through a semitransparent delicate haze, which covered its surface and spread out into the retina in a circular area of about a disc's diameter. Here the color of the haze was more decidedly gray. The macular region was invested with a similar but more milky haze, and in the center there was a typical cherry spot. These two banks of fog were separated by an area of unaffected retina. The entire arterial tree had very much dwindled, the vessels being represented by faint threads on which no light reflex could be traced. The shrinking of the arteries perceptibly increased during the ophthalmoscopic examination. In contrast, the veins seemed larger, although, as compared with the other side, they were much smaller than normal. In the lower temporal vein a moderately rapid circulation was visible, characterized by small cylinders of blood, separated by clear spaces which moved toward the disc, presenting very much the appearance that would be produced by mixing air and colored water in a tube. This patient had marked mitral regurgitation, with a strong systolic murmur and a moderate degree of cardiac hypertrophy.

In Dr. Harbridge's case there was no visible circulation in the veins during the attack. What the exact pathologic condition was under the circumstances detailed is to a certain extent a matter of conjecture, but certainly it would seem that the phenomena are best explained by assuming the presence of a spasmodic contraction of the walls of the artery; indeed, we know from the observations of Schnabel and Sachs that even in partial real obstruction, be it embolism or thrombosis, two factors interrupt the circulation, one being the obstruction itself and the other the spasmodic contraction of the walls of the artery. Therefore, it is probable that at some time or other in this patient's career, as has happened in other similar reported cases, this obstruction will become permanent by an increase of the doubtless existing endarterial changes

Abstracts from Recent Ophthalmic Literature.

ANOMALIES.

MICROPHAKIA.—MUNTENDAM (*Tydschr. v. Geneesk.*, Feb. 24, 1906) described a patient, whom he saw for the first time in 1900 in the clinic, complaining of near-sightedness (—13.0 D.), for which he received spectacles —9.0 D. The history is not significant. He returned in March, 1903, then 35 years old, complaining of his right eye. The cornea was not clear, edematous, especially in the inferior half, pericorneal injection was present, pupil wide, anterior chamber deep, iris had normal color, tension normal. A dislocation of the lens in the anterior chamber was present, the lens having a slightly oblique position, the inferior margin of the iris was horizontally turned inward and on this the lens rested. The entire margin of the lens could be seen within the pupil; the upper part of the lens was still in the pupillary plane. The lens was tremulous; the inferior part moved somewhat backward when the head was turned backward. A trauma was absent; patient suffered pain since 5 days, for which he came for help. The left eye shows an iris tremulans, with the anterior chamber deeper in the upper than in the lower part; the zonula must be relaxed as the lens quivers with motion of the bulb. Extraction in narcosis. After the operation he showed a hyperopia of 11 D., with some astigmatism, although 3 years previous a myopia of 13 D. was found. In contradiction to the supposition of an axial myopia the accommodation range of the left eye was found to be about 5 D. The determination of the refraction of the left eye was very difficult; skiascopically, myopia of 16 D. was found, but the point of reversal could be found with difficulty; it gives the impression that patient accommodates from time to time or perhaps has more than one refractive condition. The determination of the accommodation gives the same difficulties: the determination of the punctum remotum and the punctum proximum gives apparently a range of 4 D.; neither with Young's nor with Perrin's optometer a trustworthy result can be had. Determination with lenses gives 13 D. myopia; with —14 D. vision becomes at once much worse, so that here accommodation is not shown. Determination with the shadow test teaches nothing. All the tests were repeated under atropin with similar results, the impression, however, given that a different refraction is found in the center of the pupil than in the periphery, here more. The determination of the accommodation now is also difficult; it seems as if the range is lessened, but it is not absent. This would mean that the accommodation is only apparent and the consequence of a different refraction in different parts of the eye. The lens of the left eye is small in reality; with dilated pupil the margin of the lens can be seen in its entirety; it has fallen somewhat downward so that the space between lens and pupillary margin is broader in the upper part, where the zonular fibers can be seen. The size of the lens corresponds with a pupillary width of 8 mm.

Zeeman determined the following constants: L = 5° 43′ 56″.
Radius corneæ horizontalis = 7.386 mm.; verticalis = 7.426 mm.
Depth of the anterior chamber = 3.6252 mm.
Radius anterior surface of the lens = 4.8514 mm.
Radius posterior surface of the lens = 5.4 mm.
Thickness of the lens = 5.3446 mm.

We have to deal here with a small thick lens with a very strongly curved anterior surface and a relaxed zonula. The myopia must be explained through the great refractive power of this lens.

The case of Keeling (*The Ophthalmic Review,* 1902) and of Cordiale (*Annales d'Oculistique,* 1901) are compared with this case.

Muntendam examined the spherical aberration with Jackson's method and found the abnormal quantity of some 10 D.

Discussion.—Koster finds the myopia rather small; once he found a difference of the refraction of 50 diopters before and after dilation of the pupil in an 8-year-old patient, the lens was very small; Koster values a diameter of 6 mm.; the lens was somewhat displaced upward, but was firm. The thickness of the lens with luxation is partly explained from the relaxed condition of the zonula.

E. E. B.

CONGENITAL ORBITAL CYST ASSOCIATED WITH MICROPHTHALMUS.—CONNOR, RAY, Detroit, Mich. (*Archives of Ophthalmology,* January, 1906), gives the clinical history and macroscopic and microscopic findings in a case of congenital orbital cyst in a patient 10 months old. A rudimentary eyeball was present, and the cyst extended back to the apex of the orbit and was filled with a reddish fluid. Microscopic examination showed the rudimentary eyeball to be well developed, especially the anterior part. The cyst wall was composed of two layers, the outer being continuous with the sclera, and the interior one continuous with the inner layer of the globe and representing modified retinal tissue. A narrow communication existed between the cavities of the cyst and globe.

Connor states that fifty-seven cases have been reported, including those associated with anophthalmus, and he reviews the various theories that have been advanced to explain the origin of these congenital cysts. W. R. M.

A Case Having Ocular Movements Similar to Those Found Normally in the Ungulates.—Phillips, William L., Buffalo, N. Y. (*American Medicine,* March 24, 1906), describes cases which show the preservation of ocular functions existing normally only in some animals. Reports are given of two cases, each presenting essentially the same conditions, e. g., Mr. X. can see 20/20 with each eye separately and without glasses. It is possible for him to fix with both eyes, to turn either one out slowly and back again to double fixation without disturbance while reading. He is also able to converge both eyes and move his eyes simultaneously to extreme divergence. Besides this, he can move them both to the extreme right, or to the extreme left, or, by holding one in any position, from extreme divergence to extreme convergence, look at the side of his nose with the other. At no time since birth did he have double vision, and it is not produced even by the use of strong prisms. He finds that monocular vision is more restful than binocular vision, because of less head rotation. In each of these positions he has both eyes in focus, seeing with the one in front and the other at the side. The second patient could with one eye see to set type and at one side read proof with the other without the necessity of movements of the eyes. Illustrations show the remarkable anomalies. M. D. S.

BACTERIOLOGY.

Symptoms Presented by the Different Bacteriologic Types of Acute Conjunctivitis.—Duane, A., New York (*Transactions of the American Ophthalmological Society,* 1905). Duane made an exhaustive examination of 132 cases of conjunctivitis, the pathologic reports being made by Dr. T. W. Hastings. It was the purpose of the investigation to ascertain, as far as possible, (a) the prevailing types of bacterial infection in conjunctivitis, (b) the relation between the bacteriologic types present and the clinical symptoms. The conclusions are as follows: 1. There is no special type of conjunctivitis associated with any special germ. The clinical picture, therefore, affords no clue to the germ causing the inflammation. 2. Membranous conjunctivitis, as is well known, may be caused by a variety of organisms. It does not necessarily indicate a severe inflammation or one that will produce other evidences of excessive reaction beside the false membrane. 3. In trachoma, particularly in the stage of acute exacerbation, a variety of organisms may be present. They are not, however, the cause of the trachoma, but cause a conjunctivitis, with secretion, which latter can act as a carrier of contagion, disseminating the conjunctivitis and the trachoma as well. 4. The staphylococcus albus and particularly the aureus are distinctly pathogenic and predispose to the production of corneal lesions. 5. Very mixed infections seem, if anything, to be rather less severe than those in which one germ is predominant. E. E. J.

Ulceration of the Cornea from the Diplobacillus of Morax-Axenfeld.—McKee, Hanford (*Montreal Medical Journal,* April, 1906). The case reported is of interest chiefly from the result obtained by most conservative treatment. The condition of the left eye was as follows: Marked blepharo-conjunctivitis, edema of the bulbar conjunctiva, the surface of the cornea over its central third showed deep ulceration with a large hypopion, iris was dull, severe chemosis, pupil contracted. Vision = pl., T = N. The patient said he had had "sore eyes" all his life; the edges of the lids were always red, and his eyes were generally watery.

A smear was made from the surface of the ulcer and from the conjunctival sac, and tubes were immediately inoculated. From the surface of the ulcer diplobacilli were found, and were the only organisms seen. From the conjunctival sac the diplobacilli were found associated with the xerosis bacillus and the staphylococcus pyogenes albus.

The treatment received was as follows: Instillations of scopolamin; of zinc sulphate, one grain to the ounce; frequent irrigations with warm boracic solution.

Rapid progress was made, the chemosis disappeared, the ulceration healed, and the patient has a very useful eye. Vision is 2/3 normal. The author states that in Montreal he has seen 70 cases of diplobacillary conjunctivitis and on two occasions ulceration of the cornea. F. A. and P. G.

Bacteriologic Researches in Hypopion Keratitis.—Bietti, A. Padova (*Annali Di Ottalmologia,* Nos. 11-12, 1905). The writer found in one case the bacillus pyocyaneus, in the other the colon bacillus. In the case of the bacillus pyocyaneus, the clinical course was not violent enough to produce panophthalmitis, as has been observed in such cases. On inoculating the cornea of a rabbit with the organism without penetration of the anterior chamber, the writer obtained an abscess which was followed by ulceration. In the anterior chamber the bacillus set up panophthalmitis. In the case of the colon bacillus the clinical course was still more benign. After cauterizing the ulcer with the galvano cautery, it showed a tendency to heal and the hypopion was absorbed spontaneously. The final result was a leucoma with V. = 20/C. The colon bacillus was not virulent to animals. R. H. J.

BACTERIOLOGIC RESEARCHES OF POSTOPERATIVE INFECTIONS.—DUCLOS (*Annales d'Oculistique,* December, 1905), with a view of studying the bacteriologic affections which appear a few days after operations upon the eyeball, has made careful examination in nine cases of infection after cataract extraction. He has examined, first, the tears, and particularly the mucous filaments floating in the conjunctival fluid; second, the pûs found on the margins of the wound; third, the pus in the anterior chamber; fourth, the intraocular pus, when enucleation had been performed; fifth, sometimes the pus remaining at the bottom of the cavity several days after the evisceration, and, sixth, in some cases the discharge from the nasopharyngeal passages.

He concludes that the most frequent agents of postoperative infection are pneumococci and streptococci; that the infection is exogenous and always begins at the margin of the wound; that, in a clinical point of view, the suppuration due to pneumococci is characterized by a rather dense whitish slough extending toward the vitreous, while that due to streptococci, causing an abundant conjunctival secretion, appears as an ill-defined infiltration of the whole cornea.

There was no albumin or sugar in the urine of any of the cases. Some of the patients were the subjects of a chronic conjunctival or palpebral irritation; nearly all had epiphora. The infection often appears in the course of a coryza, and the most severe cases coincided with an attack of influenza. The infection may appear at any time before cicatrization is complete. Operative safety depends upon asepsis of instruments, hands and dressings, and a normal condition of the mucous membrane. G. C. H.

EXPERIMENTAL RESEARCHES ON THE IMPORTANCE OF SAPROPHYTES IN OCULAR INFECTION.—BIETTI, A., Padova (*Annali Di Ottalmologia,* Nos. 11-12, 1905). The writer recalls the interesting researches of Ulbrich, who, from numerous experiments, arrived at the conclusion that a part, at least, of the postoperative infections are caused by saprophytes. He experimented with oidium albicans, sarcina gallia, bacillus violaceus, bacillus radiciform and bacillus megatherium. Dilute cultures were injected into the eye and strong cultures introduced from the platinum point.

The oidium albicans and sarcina gallia, inoculated in emulsion, gave an intense reaction, in dilute solution a less virulent reaction. Usually with these germs there was formation of an exudate, occupying only partially the pupil, which was absorbed in from 1 to 2 weeks without leaving posterior synechiæ. A reaction of the same or only slightly less intensity was obtained with sterile broth with which the cultures had been diluted. With bacillus violaceus a true plastic iritis followed in one-third of the cases, which was conducive to the formation of an ectasia of the cornea and the anterior segment of the eye through increase of tension. Bacillus radiciform and bacillus megatherium determined not only plastic iritis with occlusion and seclusion of the pupil, but a true panophthalmitis with perforation of the cornea and sclera, followed by phthisis bulbi. The introduction into the anterior chamber of the germs on a platinum point caused generally an insignificant reaction. Once the bacillus radiciform produced occlusion and seclusion of the pupil, and another time the bacillus megatherium caused ectasia of the cornea and the anterior segment of the eye. Bacteriologic examination of the aqueous of the inoculated eyes showed that the oidium albicans and sarcina gallia were not alive three hours afterward in the strong cultures. The bacillus violaceus, bacillus radiciform and bacillus megatherium showed a greater resistance, numerous colonies developing twenty-four hours after inoculation of dilute cultures. R. H. J.

Bacteriologic Findings in Fifteen Cases of Epidemic Cerebrospinal Meningitis, with Special Reference to the Isolation of the Meningococcus from the Conjunctiva and from the Circulating Blood.—Robinson, G. Canby, Philadelphia (*Am. Jour. Med. Sciences,* April, 1906), states that in a study of 15 cases of epidemic cerebrospinal meningitis the organism isolated from the spinal fluid, circulating blood, pus from the conjunctiva, and from the central nervous system at autopsy, agrees in all respects to the diplococcus intracellularis meningitidis of Weichselbaum. It has been noted by a number of observers that purulent conjunctivitis occurs as a not infrequent complication of epidemic cerebrospinal meningitis. Thus Councilman and his co-workers observed it ten times in 111 cases. Davis considers it a very common symptom, and found conjunctivitis present eight times in 31 cases of meningitis examined. Bacteriologic examinations of purulent conjunctivitis complicating meningitis have been but seldom reported. Fraenkel reports the isolation of the meningococcus from 3 cases of conjunctivitis, and Haglund from 1 case, but the descriptions of the organisms in all these cases varies in some important details from Weichselbaum's description. Weichselbaum and Albrecht and Ghon consider that the organisms isolated by the two mentioned investigators are not identical with the meningococcus of Weichselbaum. Wintersteiner reports a case of ophthalmia arising in the course of a case of meningitis. In coverslips from the eye an organism identical morphologically with meningococcus grown from the spinal fluid was found. Weichselbaum studied Wintersteiner's preparations, and, although no cultures were obtained, he considers the finding positive. Wintersteiner thinks the infection occurred as a metastatic process. Councilman and his co-workers report one negative culture from a conjunctivitis.

In the series of cases reported by Robinson cultures were taken from the conjunctiva in three cases during life and from another case at autopsy. Two of the cases showed a purulent conjunctivitis, and from one of these cases the meningococcus was grown. The other cases failed to show the organism. M. D. S.

CATARACT.

Lecture on Cataract.—Physick, Philip Syng (Delivered at the University of Pennsylvania to the Class of 1808-09). This interesting lecture is printed from the original manuscript in the possession of John Welsh Croskey, M.D. The disease seldom occurs in young people, mostly people about 40, but Physick says he has seen it in an infant. It often comes without external violence. A long list of medicines have been used for its cure, but without effect, even if assisted by blood letting, purges, blisters, leeches, electricity, etc. Nature, unassisted by art, possesses the power of removing the opacity where it arises from mechanical violence. It is a happy circumstance that cataract may be removed by surgery. Two operations have been proposed—couching and extraction. Couching is the most ancient, but extraction is the best. It is best because it is not so painful as couching. Second, when the cataract is taken out it can never obscure vision, but it may arise repeatedly when depressed. Third, when the cataract is fluid it may be evacuated, but can not be depressed. Fourth, when the capsule is opaque as well as the lens it may be pulled, but can not be depressed. Fifth, when adhesions exist between the capsule and the lens and iris they may be torn in extraction, but not in depression without injury to the iris. The inconveniences attributed to extraction are, first, an opacity of the cornea arising from the cicatrix, but none exists when it is divided by a sharp knife; second, the passage of the lens through the pupil is said to stretch the iris so as to form an irregular pupil, but this does not prevent vision; third, the hazard of cutting the iris in passing the knife across the cornea; fourth, the great danger that the vitreous humor may escape.

When cataract is combined with other diseases, operation is improper. Circumstances favorable to the operation are that the eyelids should be free from edema and the patient should be free from pain in the head. Patients apt to faint are bad subjects. They should take laudanum beforehand. A day or two before operating a blister may be applied to the back of the neck. Physick used a knife after the direction of Baron Wenzel, one shaped like a Beer's knife. He mentions the accidents that are apt to occur and tells how to avoid and handle them. The patient's hands must be tied to the bedposts to prevent rubbing the eyes in sleep. This lecture is interesting and instructing. E. E. J

EXTRACTION OF SENILE CATARACT.—CRITCHETT, SIR ANDERSON, London (*The Ophthalmoscope,* March, 1906). Reminiscences of days before local anesthesia occupies a large part of this paper, which is difficult to abstract, but which is very interesting reading. He operates on all cases whose vision is low enough to demand it, regardless of "ripeness." For twenty years he has operated without a speculum, depending on an assistant to hold the lids apart or on his own manual dexterity to accomplish it. The knife he uses differs from the Graefe in that the blade begins to broaden immediately below the point which is central. The blade is rounded so as not to permit of rapid escape of vitreous. The section is made in the sclerocorneal margin with a small conjunctival flap. The capsulotomy is peripheral rather than central. A dry dressing is applied with a light bandage and shield. Atropin is begun after 48 hours. A narcotic is given for the first two nights to induce restful sleep. M. B.

ON SOME POINTS IN RELATION TO EXTRACTION OF CATARACT.—MARSHALL, C. DEVEREUX, London (*The Ophthalmoscope,* March, 1906). Lightness and delicacy of touch is considered essential in a good operator. He has not had the courage to attempt extraction of the lens in its capsule. Preliminary iridectomy is considered, as a rule, superfluous. A patient must have a cataract in both eyes before he can be induced to extract it in one, traumatic cataract excepted. He does not believe in extracting in one eye until the vision of the fellow eye is so lowered as to demand it. He makes a large incision with a conjunctival flap, and passes the point of the knife through the anterior capsule during the excursion of the knife through the anterior chamber. The two principal advantages of performing capsulotomy in this way are that there is never anything in the anterior chamber, such as blood, to obscure the view. Thus capsulotomy is assured, and it is certain that the point of the knife is sharp, while with a capsulotome one is never so sure of this. He prefers simple extraction, and does not do an iridectomy unless, after the extraction of the lens, the iris does not go back into position. M. B.

REGARDING THE LOSS OF VITREOUS IN THE OPERATION FOR CATARACT EXTRACTION.—DRAKE-BROCKMAN, E. F., London (*The Ophthalmoscope*, March, 1906). The revival of the operation for extraction of cataract in its capsule (formerly known as Pagenstecher's operation) and the remarkably favorable results which have lately been reported by some operators have led me to look more critically into the subject. I have, therefore, referred to my past record of cases extending over many years dealt with in this manner and have contrasted these results with an equal number of extractions by, firstly, the 3-mm. flap operation *with* iridectomy and, secondly, by the 3-mm. flap operation *without* iridectomy. I have taken the cases consecutively as they are recorded in my operation registers, and I find the results are as follows:

1. *Pagenstecher's Operation.*			
Recoveries	Good vision	194	or 66.21 per cent.
	Fair vision	83	or 28.32 per cent.
Failures		16	or 5.46 per cent.
	Total	293	
Loss of vitreous		84	or 28.67 per cent.
2. *3 mm. Flap Extraction with Iridectomy*			
Recoveries	Good vision	191	or 65.18 per cent.
	Fair vision	84	or 28.65 per cent.
Failures		18	or 6.81 per cent.
	Total	293	
Loss of vitreous		17	or 5.80 per cent.
3. *3 mm. Flap Extraction Without Iridectomy*			
Recoveries	Good vision	220	or 65.08 per cent.
	Fair vision	60	or 20.81 per cent.
Failures		13	or 4.43 per cent.
	Total	293	
Loss of vitreous		3	or 1.02 per cent.

M. B.

IRIDECTOMY IN THE EXTRACTION OF SENILE CATARACT.—ALONSO, San Luis Potosi (*Annales de Oftalmologia*, vol. viii, No. 3, 1905). Alonso states that hernia of the iris occurs in 5 per cent. (according to Panas and others) of cases of simple extraction, which he would avoid by the preliminary iridectomy. He holds that the question of the ultimate cosmetic effect is of no importance and that the visual acuity, according to the statistics of various authorities and his own experience, is nearly as good as that obtained by the simple extraction. He favors a large coloboma in preference to a simple sphincterectomy. "Our statistics show a series of 40 extractions, some of them complicated (increased tension, chorioditis, etc.), who went home, generally on foot, some of them walking a distance of a mile, and returned on the fourth day with a perfectly cicatrized wound." Alonso is strongly of the opinion that if an iridectomy had not been performed a hernia of the iris would have supervened in many of these cases. He concludes extraction with iridectomy is the operation of preference; simple extraction the exception. H. M. F.

ON PRELIMINARY IRIDECTOMY IN THE OPERATION OF CATARACT (THE "SPACED" EXTRACTION OF DE WECKER).—BERARD, Angoulême (*L'Ophtalmologie Provinciale,* December, 1905). In this article the author declares himself an advocate of this method in the majority of cases and gives his reasons. In referring to prolapse of the iris after simple extraction a curious remark of Nuel, of Liège, is quoted, viz.: "The iris never escapes beneath the bandage, save as a result of having escaped the first time during the operation." With this it is the reviewer's opinion that few experienced observers will agree. Among the causes of prolapse after simple extraction Bérard believes that sufficient attention has not been given to the use of atropin before the extraction. He argues thus: The dilated pupil undergoes reflex contraction as soon as the knife penetrates the anterior chamber. This contraction disappears under the bandage, when a second dilatation takes place, which is even greater than the first, for, in addition to the continued action of the atropin, there is a reactive tendency from the late spasm of the sphincter, and no resistance is now offered to the dilator muscle. It is then that the iris intrudes itself on the wound just beginning to cicatrize. It is affirmed that great as are the advantages attributed to simple extraction it would not seem that they are such that they should cause one to overlook the disadvantages resulting from entanglement of the iris. As examples are cited, secondary infections, delayed healing, retraction of the pupillary border of the iris, considerable astigmatism, further painful operations necessitated, from simple cauterization to secondary iridectomy. In this connection the epigrammatic sentence of De Wecker is repeated: "I feel constrained to say that an operator who holds to the principle of using, for the extraction of cataract, only the simple method is much more blamable than one who has made as definite a choice of the combined operation." The fact is not mentioned, however, that De Wecker remained to the end, perhaps, the stoutest champion of simple extraction. For the past two years Bérard has employed preliminary iridectomy in the majority of his cataract cases, and claims the following advantages in the extraction: 1. Shorter duration of the intervention. 2. Absence of the painful period attendant on the section of the iris. 3. Absence of blood in the anterior chamber. 4. More rapid cicatrization. 5. Return more rapidly to permanent vision. 6. Lessened menace from secondary accidents. 7. More certain prevention of prolapse than even the combined method affords. The author then concludes that extraction after preliminary iridectomy lightens, in great measure, the task of the operator; that it converts into two relatively slight operations what would otherwise be a single important one, and closes with the words accredited by Anbineau to a master in surgery: "Were I called on to operate on my father or my mother for cataract I would make preliminary iridectomy." C. H. B.

Double Extraction of Cataract Under Chloroform.—Bickerton, T. H., Liverpool (*Liverpool Med.-Chir. Journ.,* January, 1906), claims that this is not only justifiable, but advisable in exceptional cases. He reports the case of an old woman, "said to be about 76 years of age," blind for 10 years, and quite so for 2. In addition she was totally deaf, so that voluntary control of the eye on command during operation was out of the question. There was mature cataract in both eyes, and the danger of failure in the case of total deafness is extreme. Under general anesthesia there is less danger during the operation, but, later, straining, coughing, vomiting, would have to be considered. The eyes were constantly in motion, and several times an intended operation was abandoned for this reason. Finally, chloroform was given, and, mainly to avoid a second administration of anesthetic, both cataracts were removed by the combined method. The patient was watched day and night, sat up on the third day, and was out of bed on the seventh. Two weeks later she had excellent distant vision, and read some words of Jæger No. 1. The complete quietness of the patient and the absence of coughing, vomiting, or movement was assisted by the hypodermic injection, three hours before operation, of morphin, gr. ¼, with atropin. P. H. F.

The Simple Extraction of Cataract by Teale's Method.—Lee, Chas. G., Liverpool (*Liverpool Med.-Chir. Journ.,* January, 1906). One of the most important points in cataract is the question of iridectomy. v. Graefe's incision, far back, made excision of a piece of iris almost imperative to avoid prolapse and incarceration. The "three millimeter flap" of De Wecker now in vogue is at the corneal periphery and subject to the same dangers. Iridectomy complicates the technic, as the effusion of blood obscures laceration of the capsule. This may be avoided by preliminary iridectomy.

and there is then less demand on the patient's self-control, although the risk of sepsis is doubted by the repetition. The loss of an eye from this cause, after preliminary operation, and the danger of prolapse inherent in simple extraction, suggested the use of Pridgin Teale's method. The knife very much resembles Taylor's cataract knife or a Beer's knife with a very narrow heel. It is much thicker in the heel, more or less of a wedge, so that it retains the aqueous in its passage across the anterior chamber, and also lessens the tendency of the iris to double over the blade, a danger with the narrow Graefe knife. The point of the knife enters the cornea just within the outer margin of the cornea at its equator, and emerges at a counter puncture just within the inner margin of the cornea, about 2 mm. above the equator. The knife is then turned directly forward so that the blade is at right angles to the plane of the iris, and cuts out perpendicular to the cornea, absolutely linear, and in position about midway between the horizontal equator and the upper margin of the cornea. The section is practically a shallow flap, chiefly linear, with a small limb at an obtuse angle, corresponding to the heel of the knife at the outer angle of the cornea, and a still smaller, hardly perceptible limb corresponding to the point. At the limbs the knife passes through the cornea obliquely, but in the horizontal. linear part it cuts perpendicularly. Not much more than the edge of the iris is extruded when the lens is delivered, so that prolapse can hardly occur. The edges of the wound are in exact apposition and heal rapidly, so that there is no need of a conjunctival flap to prevent the ingress of bacteria. The knack of turning the knife is easily acquired if the point is passed well through the cornea. The proceeding is of necessity absolutely bloodless, so that every step of the operation can be followed. Usually neither eserin nor atropin is needed. Lee reports eight cases, in three of which the first dressing was done on the eighth day, and in none before the third. In one case a blow on the eye the third night after operation reopened the wound, causing escape of aqueous, but no further mischief occurred, and final vision was 6/ix. Another patient was dressed on the eighth day. The eyelids were swollen, stuck together, and there was free mucous discharge. The incision was firmly healed, and cornea clear. Final vision, 6/ix. These cases, under other methods, would probably have resulted, the one in prolapse of the iris, the other in suppuration of the wound. P. H. F.

EXTRACTION OF CATARACT IN THE CAPSULE.—HERBERT, H., Bombay, India (*The Ophthalmoscope,* March, 1906). The number of cataracts extracted in one year by the ordinary methods are compared with the results obtained by Maj. Henry Smith at Jullundur, who extracts the lens in its capsule. Smith reports loss of vitreous in about 6.5 per cent. Herbert reports loss of vitreous in 2.6 per cent. The visual estimates by both operators are made within ten days after the operation, as the patients leave the hospital about that time and are not seen again. Herbert, therefore, is compelled to needle such cases as seem to need it before they leave the hospital. His visual results compare very favorably with those obtained by Smith. Herbert reports suppurations and severe iritis as extremely rare complications. He believes that no evidence has yet been advanced, or is ever likely to be advanced, sufficient to justify removal of the transparent capsule, except under very pressing circumstances. M. B.

Needling for "After-Cataract" and Its Attendant Dangers.—Power, Henry, London. (*The Ophthalmoscope,* March, 1906). The author does not look upon this operation as of minor importance, but believes that many eyes are lost through its performance. We are not justified in doing a needling until Nature has clearly demonstrated that she is incapable of clearing the membrane further, and not then if physical conditions, such as diabetes, heart disease or chronic bronchitis, are present. He thinks the extraction of the lens in its capsule a decided step forward.

M. B.

Cataract Following Malaria. — Cosmettatos (*La Clinique Ophtalmologique,* April 10, 1906). Bigot, Kraisky and also Mitsiyasu Inouye have reported cases of cataract due to malaria. Bigot's first case was in a young man of 16 years who had a grave form of paludal bilious fever and was comatose for a time. Three months afterward patient had bilateral soft cataracts. A second case was that of a young woman of 16 years (*Annales d'Oculistique,* vol. cvi, p. 338, 1891). Kraisky had four cases in young subjects (*Westnik Opht.,* No. 6). Inouye's case was reported in the *Ophtal. Klinik,* 1901, p. 161. Cosmettatos states that the number of reported cases is not great and for that reason publishes his. It was in a man of 30 who had had good health until two years before being attacked with malarial fever at Thebes when he was traveling. The disease, at first quotidian, became later tertian, and it lasted fifteen or twenty days. Later patient had grave pernicious malaria and was amblyopic and afterward blind. In April, 1904, patient consulted a physician, who diagnosed cataract; was operated on right eye with partial restoration of vision. June, 1904, Cosmettatos first saw the case and found in the right eye a secondary cataract with vision much reduced. In left eye a white cataract. In September, 1905, each eye of the patient was operated on by Cosmettatos, the secondary cataract by a vertical opening made with a Graefe knife. Extraction was made of the left cataract and vision of each eye was ½. No fundus lesion in either eye. Bigot attributes circulatory changes as the cause of the cataract following malaria; Kraisky believes that the malaria induces a neuroretinitis, Inouye an uveitis. Cosmettatos remarks that the absence of ophthalmoscopic lesions in his case precludes the idea of inflammation of the internal membranes, but believes the cataract due to circulatory disturbances which produce defective nutrition.

B. E. F.

CASUISTICS.

OPHTHALMIC CONDITIONS AND SCHOOL HYGIENE.—FOX, L. WEBSTER, Philadelphia (*Indian Med. Record,* March, 1906), calls attention to the overwhelming statistics advanced to show the increase of myopia attributed directly to faulty school methods.

The eyes of the child at the time he begins kindergarten work are adapted for seeing things at a distance; even binocular single vision is as yet a novelty. Koppe, in Dorpat, proved this first statement conclusively by his examination of the eyes of a large kindergarten, none of which were found to be myopic or short-sighted.

With the change in environment the naturally far-seeing eye tends to become short-sighted, but this alteration is not inevitable in every case. Hyperopia is a condition of savage or uncivilized life, and these races resist this onslaught of civilization to a remarkable degree. In an examination of 104 native New Zealand children, myopia was found in only 3 per cent., and in Fox's examination of the Indians at Carlisle only 2 per cent. were found to be myopic. With the children of the civilized races the tendency of the eyes to undergo alteration is decidedly marked. The statistics of Derby and Loring, covering 2,265 eyes of New York school children, show that nearly one-fourth of the pupils descended from German ancestors, one-fifth of the Americans and about one-seventh of those of Irish parentage were myopic.

In Germany this condition is particularly prevalent. Cohn, of Breslau (1865), examined the eyes of more than 10.000 school children in varying grades and found that the condition increased from year to year. Thus in the elementary schools the percentage of myopia was 6.7 per cent.; in the gymnasium, 26.2 per cent. Stephenson, Thompson and others have repeatedly shown the marked prevalence of the condition among the Jews, who are constantly applying their eyes to near work. Allport states that the percentages of school myopes in our own country does not exceed an average of 25 per cent., but it is constantly increasing to correspond with the requirements of our advancing civilization.

In describing the abnormal circumstances which aid in producing myopia in school children, he quotes from Fenner's work on this subject in relation to the stooping position at the desk, the compression of the abdominal organs preventing a free return of blood from the head, the insufficient illumination which necessitates bringing the eyes very near the book. This posture produces an increased flow of blood to the eyes, while the higher degree of convergence necessary causes an increased pressure of the lateral recti muscles on the equator of the globe, thus increasing the entire ocular pressure. The congestion of the fundus oculi causes softening of the scleral tissue, which gives way under increased pressure, and the organ is elongated backward (posterior staphyloma). The retina is then pushed backward behind the focus of the dioptic apparatus. It is a significant fact that myopia is comparatively rare in the country schools, where they have smaller schools, with an abundance of light, fresh air and smaller classes. The method of combating myopia in the city schools should include measures that will bring them on the same basis as the country school as regards light and air. The light should preferably come from the north and from one side. Allport says the total window surface should bear to the area of the floor a proportion of 1 to 5 and the panes should be as large as possible. The desks and seats should be arranged so as to permit the pupil to rest his feet squarely upon the floor. No scholar should be so placed that the blackboard or chart will reflect the rays so as to obscure figures or characters, as this gives rise to straining and nervousness. All books should be made of good dull-finished paper and printed in large and distinct type of Latin letters. The vertical style of penmanship is to be preferred, since it obviates the unnatural twistings of the scholar with the slightest ocular defect. Every candidate should be subjected to a thorough physical ophthalmic examination before being admitted to school and the record should be kept permanently. Examinations should be made from time to time and the result recorded, which record should be passed from class to class as the child progresses.

F. A. AND P. G.

CHORIOID.

Lesions of the Chorioid Due to Intestinal Inflammation from Ptomaine Poisoning.—Bull, Charles Stedman, New York (*Transactions of the American Ophthalmological Society,* 1905). Bull reports two cases. The first, a girl of 14, had been seriously ill with ptomaine poisoning; vomiting, diarrhea, increased temperature, rapid pulse and profound prostration and delirium. Large pemphigoid bullæ appeared on the trunk and extremities. Six weeks after the attack her eyes were examined. The pupils were dilated, iris immovable, and total paralysis of the accommodation. Optic nerves pale. Scattered all over the fundus of both eyes were patches of yellowish-white exudation in the chorioid of varying size and shape, very flat, with scarcely any elevation above the general fundus. They were in different stages. The older patches were surrounded by a reddish margin, but there were no pigment masses anywhere. There were no scotoma and no limitation of the field of vision. The ophthalmoscopic picture did not suggest syphilis and no history of it was obtained. The patient got well under iron, strychnia and arsenic. The second case was in a young lady of 27. The attack of poisoning was similar to the other. The eye findings, too, were quite the same as in the first case, with the addition of some faint peripheral striæ in both lenses. In this case also there was no hint of syphilis. She was at first put on mixed treatment, including inunctions, but owing to the anemia this was changed to iron and arsenic, which were given later with strychnia. This case also recovered; even the opacities in the lenses disappeared. E. E. J.

Suppurative Chorioiditis with Abscess of the Chiasm and Meningitis.—Pes, O., Turin (*Annali di Ottalmologia,* Nos. 11-12, 1905). A woman, 52 years old, affected with keratoiritis with hypopyon of infective origin, was treated for some time and apparently cured. An almost total leucoma with light perception remained. Three years later the patient returned to the clinic with an ulcer in the leucoma. There were present high fever, great depression and nausea, with vomiting, on account of which symptoms the eye was exenterated. Death occurred two days after the operation. The autopsy showed cerebrospinal meningitis and an abscess in the left half of the chiasm. Pus from the abscess had reached the meninges from a small opening in its lower part. Cultures from the vitreous at the time of the operation showed the staphylococcus albus in pure culture, while the streptococcus was present in the pus from the abscess in the chiasm and the meninges. The abscess which led to the meningitis was probably formed three years before by a process of latent streptocococcic chorioiditis. The organism has traversed the optic nerve to the chiasm, forming a latent abscess. R. H. J.

CIRCULATION.

Extensive Remnants of the Fetal Ocular Vessels.—Ruhwandl, Franz (from the eye clinic of Prof. C. Hess in the University of Wurzburg. *Zeitschrift fuer Augenh.,* 1906, xv, p. 245). observed in a man, aged 31, not only the stem of the hyaloid artery, but also its distribution on the posterior capsule of the lens in form of a network of fine whitish threads, and the remnants of two blood vessels of the vitreous branching off from a swelling of the stem of the artery, one upward and outward, the other downward and inward. C. Z.

Transient Blindness Due to Spasm of the Retinal Artery. —Lundie, R. A. (reprint from the *Ophth. Review,* May, 1906), reviews some of the previously reported instances of observed spasm of the retinal artery and adds a case of his own occurring in a man 88 years of age with weak muscles and heart and tortuous but not particularly firm arteries. Sudden complete blindness occurred in the left eye, but began to clear in the upper field within half an hour. Ophthalmoscopic examination made at this time showed in the upper main branch of the retinal artery an interruption of the column of blood just beyond the margin of the disc in a section of the vessel somewhat less in length than one disc's diameter. The position of this part of the vessel could be traced as a whitish streak, but it seemed entirely empty. On the proximal side the vessel was of normal caliber; on the distal side the column of blood was continuous, somewhat less than in the other arteries of corresponding rank, but by no means small. A dose of whisky was given, and while awaiting the arrival of nitrate of amyl vision was recovered and the obstruction in the vessel disappeared.

The author says that the only possible explanation of the symptom and the appearance seems to be that there was a spasm of the vessels, but he is unable to assign any satisfactory cause for the spasm. From a study of some of the reported cases the author distinguishes three distinct types of spasm. In most of the cases the whole artery was empty and refilled gradually. (The case of Dr. Harbridge, reported in this number of Ophthalmology, belongs in this group.—Reviewer.) In Benson's case the small empty section passed onward by a sort of peristaltic movement and refilled suddenly (Sachs' case not given by the author), also presented an onward moving constriction. In the author's case the still smaller empty portion remained stationary and refilled gradually. From these varied forms the author concludes that there must be much to be learned about the innervation of the arteries and a wide range of causes leading to disturbances of that innervation. He states that he does not know that such an extremely limited and fixed spasm of an artery has been observed or suspected, but notes a parallel observation by Hawkins in the muscular walls of the intestines. He says that the possibility of arterial spasm being the cause of obstruction should always be borne in mind, and treatment proper for the relief of this condition should be instituted, such as massage, the use of nitrate of amyl and the performance of iridectomy. A careful search should be made for a constitutional tendency which may predispose towards attacks of this nature and the free elimination of waste products should be promoted. The author infers that the demonstration of the occurrence of spasm in the eye suggests that it may occur elsewhere, and he believes that in a case of Mackay, not heretofore published, where transient monocular blindness, in which subsequently a permanent sectoral defect occurred, was produced by vertical diplopia, that the only plausible explanation is that the spasm extended beyond the retinal arteries to those of some part of the extraocular neuromuscular apparatus, most likely to some arteries in the orbit which supply the extrinsic muscles. (A case similar to this reported by Moos, *Virch. Arch.*, vol. xli, p. 58; besides the transient diplopia and blindness there was transient enlargement of the liver, recurring pericarditis, endocarditis and embolism of the mesenteric artery.—Reviewer.) The reviewer has recently gone over the literature of this subject for a paper which was accepted by the executive committee of the Section on Ophthalmology of the American Medical Association last April, to be read at the Boston meeting, and in it found much to substantiate these views and regrets that he did not have the valuable paper under review from which to draw. W. Z.

Subhyaloid Hemorrhage: Its Source and Anatomic Situation.—Ball, James Moores, St. Louis (*Jour. Miss. State Med. Assn.*, May, 1906). The sharpness of outline of these effusions is not consistent with location in a tissue like the chorioid. The patients complain of seeing objects as through a red veil, indicating that the blood must be in front of the layer of rods and cones. The color of the extravasated blood being nearly that of the vessels, it is not easy to determine the relation of the latter to the hemorrhage. Calcification or fatty changes later on may show that the blood was in front of the retina. Only one histologic examination

(J. Herbert Fisher) is on record. In this case the blood escaped from a minute vessel and detached the internal limiting membrane from the retinal layers. The disease is a rare one. Females appear to be somewhat more susceptible, and menstrual anomalies, pregnancy and the climacteric are etiologic factors. Of all intraocular hemorrhages this form is the most favorable, both as to the restoration of vision and as to the preservation of life. P. H. F.

SUDDEN LOSS OF VISION BY INTRAOCULAR HEMORRHAGE AND ITS TREATMENT.—DIDIKAS (*Annales d'Oculistique*, March, 1906) reports the case of a woman 48 years of age who applied for treatment for the sudden loss of vision of the right eye. More than a year before she had noticed, on awakening in the morning, that she could not see the upper half of objects with that eye. This condition remained stationary until within a few days, when, while reading, black objects seemed to float before that eye and increased in size and number until a dark cloud shut out all vision. There was very slight pain in the eye and pulsation was felt in the temporal artery. The ophthalmoscope showed only a faint fundus reflex. The pulse was hard and firm and the radial and temporal arteries were tortuous and rigid. The heart sounds were not normal. The second sound of the aortic orifice had nearly disappeared. Her sister and two of her children had died of heart affections. She had had several attacks of something like angina pectoris. Five abortions made it probable that she had contracted syphilis. The author concluded that he had to do with a case of arteriosclerosis or chronic arteritis, and that intraocular hemorrhage was due to rupture of the altered vessels. There were only slight traces of albumin in the urine.

Under treatment by purging, intramuscular injections of cyanid of mercury, sweating, iodid of potash, dry cupping to the back and hot stupes to the eyes, vision was restored to almost normal, but with muscæ volitantes, at the end of two months.

The author seems to attribute the cure chiefly to the intramuscular mercurial injections, and ignores the probable effect of time and the natural absorption of extravasated blood. G. C. H.

RELAPSING HEMORRHAGES INTO THE ORBIT FROM INSUFFICIENT COAGULABILITY OF THE BLOOD.—WAGNER (from the eye clinic of Dr. Praun, Darmstadt; *Centralbl. für Aug.*, 1906, p. 42). A cyst with sanguinolent contents was removed from behind the inner end of the left lower lid of a boy, aged 5 years, and the wound healed by first attention. After five days both lids showed intense ecchymoses and the eyeball was protruding from a venous intraorbital hemorrhage. As the hemorrhage had increased the next day, the scar was incised and about a tablespoonful of thick, black, non-coagulated blood evacuated; more blood oozed upon pressure on the lids, with subsidence of exophthalmus. After eight days, and again after five days, the hemorrhages relapsed, but were stopped by eleven injections of 10 c.cm. of Merck's sterilized gelatin (10 per cent.).

Three months after the first, another hemorrhage occurred, with intense exophthalmus, so that the lids could scarcely be closed. Ophthalmoscopically the veins were more filled than normally. Upon renewed injections of gelatin the hemorrhage did not recur.

The cause of the hemorrhages was very likely an insufficient coagulability of the blood. W. recommends injections of gelatin in analogous cases and in relapsing hemorrhages into the anterior chamber of the eyeball. C. Z.

CONJUNCTIVA.

PARINAUD'S DISEASE.—DE VRIES (*Tydschr. v. Geneesk.*, Feb. 24, 1906) described two cases of Parinaud's disease with microscopic specimens. Patients felt sick before they came under treatment. Waller Zeper observed for two weeks a case which was cured within a fortnight. E. E. B.

TREATMENT OF GRANULAR VERNAL CONJUNCTIVITIS.—LEWIS, DAY H. (*Ottumwa, Iowa, Med. Journ.*, March 15, 1906). This ailment is frequent in Iowa. The condition comes on suddenly, apparently accompanying a slight cold or following friction of the eyelids with the finger to relieve itching. The secretion rapidly becomes abundant. A nodular or granular appearance is soon noted on eversion of the lids, and great masses of seedlike projections may bulge out of the lid fissures. Relapses occur in many cases, year after year, unless active measures are taken, accompanied by proper hygienic precautions. The affection soon involves the cornea, causing ulceration and pannus. The old treatment, with silver, alternating with copper later and the interval use of tannic acid, runs over many months and does not produce a cure. Grattage at as early a stage as possible is the only rational procedure. There is little or no reaction. The inner surface of the lid is scarified; and bichlorid, 1/1000, scrubbed in with a stiff brush. The Knapp forceps can only be used where the granulations are very soft. The after-treatment is that of trachoma operations. P. H. F.

AMYLOID DEGENERATION OF THE CONJUNCTIVA AND LIDS.—RAEHLMANN, Weimar (*Die Ophth. Klinik.*, Nos. 17-18, 1905). By the aid of ultramicroscopic investigations of albuminous solutions and their transportation in the body R. has found that this migratory albumin is not dissolved in the tissues of the body, but is suspended in a formed substance. Through union of the fixed albuminous substances or the products of decomposition with this wandering ferment new alotrope albumin bodies of different molecular composition and other chemical properties are formed. This transition of tissue albumin into peptone through ferment substances, and also the change from glycogen to sugar, Raehlmann has observed with the ultramicroscope. The substrata glycogen which is closely allied to amyloid substance formed small, distinct, globular, gray bodies, which under the application of diastase underwent visible diminution and through crumbling gradually disappeared from view. So long as the solution of the globules continued they represented chemical glycogen, but after disintegration became sugar. The supposition is that the amyloid material with the same chemical constitution as albumin would undergo the same chemical alterations in the system. One must then assume that a new albumin molecule is the cause of the change of the fixed tissue albumin into the amyloid substance. Microscopic local findings confirm this view. When the disintegration begins immediately beneath the epithelium in the cellular tissue of the conjunctiva one observes the cells here and there distended with granules, which must be viewed as transformed of the cellular albumin and also in part to immigrant constituents, which excite the metamorphoses of the albumin. The fact that in the beginning of the flaky formation in the vicinity of the amyloid focus numerous such small globules (scarcely visible with the ordinary microscope) are met with between the cells. These granules are frequently found within the nucleus of the disintegrated cell, at times entirely filling them. That these granules are the beginning of the amyloid degeneration can be demonstrated by the characteristic chemical reaction. The factor in determining which albuminous body shall be affected by the ferment is dependent upon the chemical and physical affinity for it. In the early stages of hyalin and colloid degeneration a cellular nuclear change is noted. A quite similar change is seen in the presence of glycogen in the cellular tissue. By fusion of the degenerated little bodies we have degeneration of the individual cell and through the fusion of the latter we have the flaky formation. But also in an apparently homogeneous amyloid reacting cells or flakes the contents are shown by the ultramicroscope to be still granular. Clinical experience shows that local amyloid degeneration of the eye is capable of complete retrogression with a return to the original tissue

To explain this we have to assume that during the period of the degeneration the original tissue elements, at least chemically, were retained. W. Z.

Treatment of Gonoblennorrhea.—Bernheimer, St., Innsbruck (from the eye clinic in the University of Innsbruck; *Klin. Mon. fuer Augenh.*, 1906, I, p. 253). With regard to the substitutes of nitrate of silver, argentamin, itrol, ichthargan and protargol in the treatment of blennorrhea, B. came to the same conclusions as Th. Saemisch (Graefe-Saemisch Handbook, 2d edition), viz., that they cause less pain but are not as effectual as nitrate of silver; he therefore discarded them entirely. B. also denounces cold applications as being apt to produce inflammations of the iris and a greater vulnerability of the corneal epithelium. Warm applications are preferable in relieving the swelling and tension without endangering the epithelium of the cornea. The cold has no influence on the infection, whereas the favorable effect of warm fomentations on all kinds of inflammations of the anterior uveal tract has been experimentally proven. He urgently recommends the inspersion of airol powder, with which he had excellent results. Sixty-five out of 69 cases of severe gonoblennorrhea neonatorum were completely cured in a relatively short time. Four eyes were lost, which from the start had extensive infiltrations of the cornea, perforations, prolapse of iris or suppuration of the interior. Out of twelve eyes of adults, nine, which came under treatment with intact cornea, healed in one or two weeks. Two out of the three eyes which had corneal ulcers at the commencement could be preserved with relatively good vision. C. Z.

Conjunctivitis in Erythromelalgia. — Hilbert, Sensburg (*Woch. f. Therap. u. Hyg. des Aug.*, March 22, 1908). The patient was a 45-year-old woman suffering from erythromelalgia. The upper and lower lids of both eyes were swollen, hard and purple. There was pain both spontaneously and on palpation. Hot tears flowed from between the lids when they were separated. The upper lids could not be everted owing to pain. The conjunctiva of the lower lids was intensely congested, swollen and velvety, so that the meibomian glands were invisible. There was mucus in the cul-de-sac. The bulbar conjunctiva was but slightly injected. There was no photophobia. It was a question whether the ocular condition was merely an accidental complication or a part of the vasomotor disease. Astringent washes aggravated the symptoms, but cold compresses relieved them. Syrup ferri iodid was given and in two weeks' time all the symptoms had disappeared. The fact that the onset and disappearance of the ocular condition was coincident with that of the swelling and pain of the fingers and toes, that the pain was spontaneous, that the conjunctiva of the lids was alone affected, that the skin was involved, that there was no photophobia and that astringents aggravated the condition points to the ocular affection being a part of the angioneurotic disease and proves that the eyes may be the seat of acroparathesia. W. Z.

PRIMITIVE TUBERCULOSIS OF THE CONJUNCTIVA AND ITS CONSEQUENCES: THE CONJUNCTIVA AS THE POINT OF ENTRANCE OF TUBERCULOSIS.—CABANNES, Bordeaux (*Archives d'Ophtalmologie,* January, 1906). The opening of the lids leaves the conjunctiva in direct contact with the external air and a great variety of germs are deposited upon its surface. Though the bacillus of Koch has not been met with on the normal conjunctiva, there is no doubt that it is often deposited there with the dust of the air that carries it. The conjunctiva may be compared in this respect to the other cavities of the face, the buccal cavity with the pharynx and tonsils and the nasal fossa with the accessory sinuses, and tubercular bacilli have often been found in them.

It is known that in many cases of tuberculosis of the glands of the neck the infection enters through the tonsils, though the tonsil itself may be healthy. The Koch bacillus deposited on its surface reaches the lymphatics and the glands of the neck. The author believes that tuberculosis of the glands of the face and neck may have its origin not only in the tonsils and nasal passages, but also in the conjunctiva. This mode of origin, questionable if there is no conjunctival lesion, is certain in cases of conjunctival tuberculosis, either primitive or secondary. A case is reported in illustration. The patient, 15 years of age, applied for treatment of his left eye, the lids of which were swollen, on the first of April. On the eleventh of the preceding February he had noticed an enlarged gland, the size of a hazelnut, in front of the left ear, and two days later the eyelids were swollen. A physician consulted at this time found the conjunctiva normal. The swollen gland continued to enlarge and was punctured by the physician, who thought that there was a lesion of the parotid, as the fluid that escaped from the wound appeared like saliva. It was not until the 17th of September that he noticed a very small false membrane on the palpebral conjunctiva. On the 18th there was fever, which lasted six or seven days. During this time the eye was merely photophobic. Soon an enlarged submaxillary gland made its appearance. At the end of February the false membrane separated from the palpebral conjunctiva, leaving a deep localized ulceration. The condition remained stationary until the 5th of March, when the preauricular gland had grown very large and was again punctured and a little pus escaped. On March 7 another submaxillary gland was enlarged. On the 12th of March there appeared on the cheek, below the external canthus, a little translucent elevation of the skin, with deep infiltration. On the 27th the glands were increasing in size rapidly, the whole side of the face was swollen and on the skin of the upper eyelid there was a series of little papillæ noticeable by the eye and giving to the touch the sensation of hard grains. The left upper eyelid was swollen, the retrotarsal fold was puffed out and the eye was half closed and slightly injected. There was only a little secretion. On everting the lid a series of exuberant vegetations, filling the entire cul-de-sac, was seen. Some of them were prominent and others flat; all were red. In the irregular fissures between them there was a little thick pus. There was some fissured ulcerations covered with a yellowish adherent substance of a granular appearance. On its free border the lid presented in places isolated tubercles in various stages of evolution, some of them larger than a millet seed. The infiltrated spot on the cheek was acute lupus. Microscopic examination of the conjunctival vegetation showed a large number of giant cells commencing to undergo caseous degeneration. The eyeball itself was sound and all the other organs were free from any sign of tuberculosis. The father and mother of the patient were in good health, but a sister had died of meningitis at the age of 5 years and an aunt had died of pulmonary tuberculosis.

The treatment consisted of the applications of the actual cautery to the vegetations, ulcerations and tubercles. Six rather extensive cauterizations were practiced at intervals of three or four weeks. In January the cure of the conjunctival tuberculosis was complete. There was also a rapid cure of the cutaneous tuberculosis, but the diseased glands improved much more slowly. These enlargements, however, disappeared in the course of a few months under the use of injections of iodoform dissolved in ether.

The author calls attention to the distinctness with which the infection, fortunately remaining local, was propagated in the neighborhood step by step. Tuberculosis of the skin of the face, of the preauricular glands and then of the maxillary and cervical glands. He has studied a number of published cases with reference to the organs secondarily affected and considers the usual order of infection to be (1) cornea, sclerotic and ocular globe; (2) lacrimal passages; (3) distant organs, generalization. Corneal lesions, rare in conjunctival tuberculosis, often so closely resemble those met with in trachoma that they can be distinguished only by microscopic and bacteriologic examination. Propagation by the sclerotic is exceptional. The destruction of tissue may not pass the sclerotic, but in some cases has penetrated it and set up panophthalmitis. Extension of tuberculosis from the conjunctiva to the lachrymal sac is rare, and even doubtful, while extension from the nose is comparatively common.

The first important stage in the propagation of tuberculosis from the conjunctiva is the glandular stage. The first glands affected are the preauricular and parotid, corresponding to the lymphatics of the outer two-thirds of the conjunctiva, and the submaxillary glands which are connected with the lymphatics of the internal angle of the eye. The order of frequency of involvement is: the preauricular, the submaxillary, the cervical, the parotid and the masseteric.

The glandular enlargements may be so extensive in the beginning as to mask the conjunctival affection, which is not detected until later. The glands sometimes suppurate.

Sometimes the infection proceeding from the conjunctiva to the glands stops in its course to produce a tuberculosis of the cheek.

When the tubercle bacillus reaches a gland it develops there, and even if it is exceptional to find it in the secretion, inoculation in animals gives positive results.

Most frequently tuberculosis of the conjunctiva does not pass the barrier of the glands. It may, nevertheless, in exceptional cases, by way of the lymph or blood, reach more distant organs and end in death by pulmonary or laryngeal phthisis, generalized tuberculosis or tubercular meningitis, and should, therefore, be diagnosed early and energetically treated. The author's preference in treatment is for repeated thermocauterization. G. C. H.

CORNEA.

CONGENITAL PIGMENTATION OF THE CORNEA.—KRAEMER, A., San Diego (*Centralbl. für Augenheilkunde,* 1906, p. 39), describes a brown pigment spot, 2.5 mm. long, 11.5 mm. wide at the upper temporal portion of the cornea, 1.5 mm. from the limbus, in a German, aged 35. It was located in the upper layers of the cornea; the epithelium was perfectly smooth and showed normal reflexes. The spot consisted of fine dark-brown, closely arranged pigment granules. The eye was otherwise perfectly normal. By exclusion K. regarded it as a congenital affection caused by congenital spreading of uveal pigment. The incident literature which is quoted is very scanty on account of the rare occurrence of this affection. Steiner (*Centralbl. für Aug.*, October, 1905) reported two cases, observed in Javanese, and considered them to be very rare, even in the dark-colored races. His doubts as to the occurrence of pigment spots in white people are cleared by the observation of K.

C. Z.

Nodular and Disciform Keratitis.—Straub (*Tydschr. v. Geneesk.*, Feb. 24, 1906) described cases in which disturbances of the sensibility were present. He thinks that they are of no value, because such symptoms are present with every change of the corneal epithelium. He did not examine the corneal scrapings for tubercle bacilli, but mentions Fuchs' negative results.

Nicolai does not consider the prognosis bad when the poor vision is the result of irregular astigmatism, as in these cases.

Fuchs found in one case the membrane Descemetii not intact.

E. E. B.

Triangular Opacity in the Superficial Layers of the Cornea Occurring in Syphilitic Subjects.—Posey, William Campbell, Philadelphia (*Ophthalmic Record*, February, 1906). A lad of 17 years with congenital syphilis, suffering from interstitial keratitis, developed in one eye a superficial triangular opacity of the cornea, extending from its base to its center. This opacity seemingly was made up of thickened epithelial and subepithelial elements. It had a glistening white appearance and was slightly raised above the surrounding tissues and had sharp lines of demarcation. The eye was under observation for nine years and the opacity underwent no change. His second case was that of a colored woman, aged 32 years, with acquired syphilis in the late secondary or early tertiary period. One cornea presented an opacity very similar in appearance, size and position to that of the boy above described. The tension was + 1. There were evidences of excavation of the nerve head and of uveitis. This case has not been observed long enough to determine the influence of treatment.

M. B.

An Unusual Association of Interstitial Keratitis.—Stephenson, Sidney, London (*Ophthalmoscope*, February, 1906). The patient was a woman, aged 32 years, unmarried, who had undoubted interstitial keratitis of hereditary syphilitic origin. The eyelashes of the right upper eyelid mostly turned white. One lash only turned white on the left upper lid. Research of the literature shows that this blanching of the eyelashes has been known to accompany disease of the uveal tract. M. B.

Grated Opacity of the Cornea.—Freund, Heinrich (*Wiener Klinische Wochenschrift,* Feb. 1, 1906). Biber was the first one to describe three cases of this rare disease in 1890. In 1899 Haab added to these four new cases, in which three sisters and a son of another sister were affected. In the same year Dimmer found three members of one family similarly affected. Hanenschild in 1901 found two cases, where a father and his daughter were affected. In 1903 the author added fifteen cases afflicted with the disease, which he had found in two families. After this he found seven other members belonging to a side branch of one of these families, who were also suffering from the same affection. The author now goes on to give the geneology of these families. The characteristic symptoms of the disease are:

1. An affection of the cornea, which appears only after puberty and is hereditary.

2. Gray superficial opacities in and around the cornea, which are situated beneath the epithelium, so that the epithelium becomes raised and the surface of the cornea uneven.

3. The diffuse opacities of the cornea appear under a magnifying glass as a grated network.

4. The marginal portions of the cornea always remain unaffected.

The disease is very similar to the nodular form of opacities of the cornea, described for the first time by Groenouw in 1898

In all these cases the etiology was unknown. In 1905 Wehilis described a similar affection and considered it a primary isolated form of chronic tuberculosis of the cornea and called it lupus corneæ. J. G.

Post-Traumatic Parenchymatous Keratitis. — Terlinck. Brussels (*La Clinique Ophtalmologique,* Feb. 10, 1906). The inquiry as to the etiologic value of traumatism, which heretofore has not had anything more than a speculative interest, latterly has acquired a practical importance ophthalmologically, as is the case of the other branches of medicine. Terlinck believes that trauma has not been sufficiently considered as a cause of parenchymatous keratitis, except by a few recent authors (Darier, Groenouw, Terrien). Perlia, who drew attention to this question, has found in the literature many cases, of which the earliest was in 1890. But these had almost escaped notice from the reason given. The meeting with cases in subjects of sickly, scrofulous aspect or suspected inherited syphilis, in which interstitial infiltrations of the cornea that have followed the presence of a foreign body is not rare. Terlinck reports a case: A blacksmith, 17 years of age, scrofulous, teeth irregular, was first seen October 23 last, had been injured two days before; in the center of the cornea there was a scale of iron surrounded by a diffuse interstitial infiltration which covered nearly the whole cornea; extraction of the iron, atropin. October 25, infiltration rather more extensive but less dense at the periphery. October 26, better. November 3, almost well, the infiltration having nearly disappeared. This case gave the appearance at first of a more serious lesion with a more lasting effect, the foreign body in this class of subjects giving rise to an apparently more serious condition than would have been the case in which a corneal foreign body had injured a healthy subject. The injury may be only a superficial corneal erosion; two cases (Antre, Ohm) were due to the action of dilute acid; in others simply a blow. For the most part in these cases the patients present the inherited syphilitic characteristics. Terlinck quotes two other cases. From the standpoint of indemnity in such cases after injury, Terlinck believes a decision is not always an easy matter. The presence of a general condition lessens the responsibility. B. E. F.

Keratitis Parenchymatosa and Trauma.—Enslin, Eduard. Stuttgart (*Zeitschrift fuer Aug.*, xv, 1906, p. 227). As a proof that traumatism may elicit parenchymatous keratitis, as asserted by Guillery (see our abstract in Ophthalmology), Enslin reports the following case: A piece of old calcimining flew into the right eye of a man, aged 18, while tearing off a wall paper. He washed his eye with water, but the eye became more inflamed. Five days later the patient was admitted to the hospital. There was no sign of a caustic action, which on account of the old material would have been very unlikely, but a typical parenchymatous keratitis developed. V. sunk to motioning of hand at 1 m. After 3½ months the eye was without irritation and V. = 5/x. It was peculiar that during the whole time of observation no blood vessels could be seen in the cornea, although it was frequently examined with Zeiss' corneal microscope. That the avascular form is principally not different from vascular parenchymatous keratitis, Enslin proves by another case, in which in one eye the parenchymatous keratitis took an avascular course, while after a few months the other eye exhibited the same affection, however with abundant vascularization. Although corneal affections had occurred in the family of the first patient, he presented no signs of constitutional disease and never had had any symptom of scrofulosis or congenital syphilis in his childhood. But even if (the methods of examination being not sufficient to prove it) any such dyscrasia may have existed. Enslin is certain that the traumatism was the immediate cause of the parenchymatous keratitis. C. Z.

FAMILY CORNEAL DEGENERATION.—ROCHAT (*Tydschr. v. Geneesk,* Feb. 24, 1906) thinks that the "gitterige" and the "knoetchenformige" (nodular) keratites could be brought under one group, which ought to be called, on account of the absence of inflammatory symptoms, family corneal degeneration; here, too, also belong the cases of Hirschberg, where the general picture was typical, but the opacity formed one irregular mass in the cornea without distinct nodules or "gitter." Rochat's cases belong doubtless to the group of the family corneal degenerations, but show many peculiarities. Six members of one family, related in the second and third degrees, suffer from the same disease; four members more may suffer from the same disease. All show a central opacity of the cornea, which consists of patches and points, which are sometimes separate, sometimes confluent; they lie superficial under the epithelium; the surface is rough in the older members; very prominent spots occur in the opacity. The corneal periphery is transparent or slightly diffusedly opaque; vessels generally are absent, rarely one or two superficial vessels are seen, which are probably the consequence of accidental inflammations. The eyes were not inflamed; the younger members only showed sensitiveness for strong light. The fundi were normal with the exception of some myopic falces. Vision was proportionally poor to the amount of the opacity; the older patients were farmers. Their physician stated that three other members of the family suffer from a like corneal affection; a fourth went to an ophthalmologist, who found central opacities of the cornea with irregular astigmatism, V. O. D. S. with —4 = 6/lx. This family differs from the other cases: 1. Only men are affected. The women remain immune, but transmit the disease to their children. Rochat found the mother of the three youngest patients normal; the grandmother, three sons of whom had the disease, was operated on some years ago for cataract and had then normal corneæ, one daughter was treated for an acute corneal ulcer, and did not show the affection. 2. All sufferers from the corneal degeneration show changes of skin and hairs: absence of brows and lashes and absence of hair on the inferior part of the occiput and on the forearm; ichthyosis follicularis; an atrophic bone-system, most conspicuous at the under jaw. The intellect is good; they are healthy people without known hereditary diseases. Tuberculosis is absent in the family, and most probably also lues; one has a struma. 3. The affection begins early; the three youngest sufferers are between 11 and 5 years; the other members claim that their condition is congenital. The optici were normal.

E. E. B.

Transitory Ectasis in the Course of Kerato-Conus.—Terrien (*Archives d'Ophtalmologie,* January, 1906) reports a case in which kerato-conus was transferred into globular staphyloma by distension of the thinned cornea. To prevent a probable rupture, a median tarsorrhaphy was performed, and six weeks later the ectasis had disappeared. Terrien thought that there had been a rupture of Descemet's membrane, allowing the aqueous to penetrate between the layers of the cornea, and that the disappearance of the staphyloma was due to the healing of this rupture. G. C. H.

Ulcus Corneæ Serpens.—Warner (*Wiener Medizinische Wochenschrift,* Feb. 25, 1906). The author employed Romer's pneumococcus serum in the treatment of this affection. All the cases were examined bacteriologically. The injection was made into the skin of the back of the patient. Some of the cases were in the incipient stage, while others were in a more advanced stage where beneficial effects of this treatment could hardly be expected.

J. G.

GENERAL DISEASES AND VISUAL ORGANS.

The Ocular Manifestations of Syphilis.—Barck, Carl (*Journ. Miss. State Med. Assn.,* April, 1906). If we compare the syphilitic ocular lesions which are caused by acquired lues with those due to the inherited form, we find that the former have a predilection for the uveal tract and the latter for the cornea. In the former we have acute inflammatory processes; in the latter a tedious, chronic course of a degenerative character. This difference is certainly due to a change, possibly to an attenuation which the virus has undergone in its transference from one generation to another. Parenchymatous keratitis, the most frequent affection of hereditary lues, is caused in 3 per cent. only by acquired disease. The clinical picture does not differ from that of hereditary syphilis, but the female sex predominates. A rare form is punctate or dotted keratitis. The impairment of vision is slight. The iris is frequently implicated. P. H. F.

Syphilitic Affections of the Eye.—Cramer, Alfred, Camden (*Jour. Med. Soc. N. J.,* May, 1906). Specific disease is a frequent cause of ocular affections and of 2.2 per cent. of blindness. The disease may be insidious, unaccompanied by pain or other striking symptoms, or it may be acute and attended by much suffering. Accurate diagnosis and prompt treatment are of great importance. The syphilitic poison may directly act on the uveal tract, for which, like other mesodermal tissue, this virus has a special predilection, or it may first attack neighboring structures, as the bones of the orbit or the brain. The lids, conjunctiva, cornea, and tear apparatus may be the original point of entrance of the poison as well as the seat of hard chancre, in consequence of kissing, rubbing the eyes with the finger or with anything which has been in contact with syphilitic virus. The custom common in Italy and Russia, of removing foreign bodies from the eye by licking, has not infrequently been responsible. No part of the eye is immune. Even the lens may be affected secondarily. The frequency of involvement in uveal tract, optic nerve, muscles, retina, cornea, tear apparatus, lids and conjunctiva, socket. The affection is frequently bi-lateral. Sixty-five per cent. of all cases occur in men, and the age between 30 and 40 is most disposed. Congenital syphilis may produce any and all of the forms noted in the acquired form of the disease. Interstitial keratitis is the most common form. More girls are affected than boys. Late lesions may fail to respond to specific treatment. P. H. F.

BLINDNESS AND HEMIANOPSIA IN A CASE OF CEREBRAL SYPHILIS.—POULARD. and BOIDIN (*La Clinique Ophtalmologique,* April 10, 1906). The authors state that their case is interesting not only from the ocular troubles which were very pronounced and of long duration, but more so from the general concomitant manifestations and from the findings in the examination of the cerebrospinal fluid. The case was that of a man, 52 years, with alcohol and syphilitic antecedents at 22 years. Two years before the writers saw the case there had been both visual and cerebral troubles. Following severe headache, sight began to fail; patient was obliged to stay in bed; in a few days there was amelioration. Several times in the year the same conditions reappeared; there was aphasia (word blindness and word deafness). Consciousness, with contractions of limbs, was once lost. Memory had been defective a long time. At the beginning of last year the patient was seen for the first time by the authors; general health good; no motor or sensory trouble. Examination of the eyes resulted in finding changes in both visual fields; marked lessening of the right half of each, approaching very nearly to the vertical meridian. The left half of each field was not intact, it having receded somewhat in both eyes. No lesion of either fundus. Pupillary reactions normal. Patient was not seen for eight months. Returned January 9. There was then mental confusion, loss of power of speech, vomiting, retains consciousness, violent headache, no symptoms of meningitis, no paralysis, albumin in the urine. Lumbar puncture; cerebrospinal fluid purulent. many polynuclear leucocytes, few lymphocytes. fluid is sterile. January 11: Headache lessened, memory returned, albumin disappeared from urine, blindness persists. Antispecific treatment, bromid of mercury and inunctions and iodid of potash. January 22: Vision returned with right hemianopsia. January 25: Vision persists, mental faculties feeble, but there is no delirium, the patient doing well. B. E. F.

GUMMA TARSI.—BLOK (*Tydschr. v. Geneesk,* Feb. 24, 1906), was consulted by a 25-year-old, healthy-looking married man for a dark-red circumscript swelling of pea-size of the left upper eyelid, which appeared at its outer side, was painful, moderately hard on touch. The conjunctival side was also much injected and swollen as with an acute chalazion. No edema of the lid outside the tumor, no pain of the preauricular lymph nodes. The skin over the tumor was movable. Blok considered it to be an acute chalazion and prescribed cataplasmata. The tumor was softer after two days and the conjunctiva covered with an irregular dirty-grey exudate which could not be removed and extended over the tumor portion of the conjunctiva. Blok began to doubt, but patient told him he never suffered from lues, had healthy children and no symptoms of lues. So Blok let him continue with sublimate compresses. The tumor became necrotic. He consulted a dermatologist, who saw nothing specific, but recognized the man as a patient whom he had treated four years previous for syphilis. The therapy was accordingly changed, the tumor was expelled more and more and left a considerable defect of the upper lid.

The literature teaches that a gumma tarsi often is mistaken for an acute chalazion, but nowhere the grey infiltration of the conjunctiva is described. E. E. B.

MONOLATERAL INFECTIVE OPTIC NEURITIS AFTER MEASLES.—VANCRESSON (*Annales d'Oculistique,* March, 1906). Measles, like all infective general diseases, may cause complications which are often benign, but occasionally assume a grave character. Among the latter, manifestations in the central or peripheral nervous system are important. Cases of hemiplegia, infantile paralyses, aphasia, hysteria, hemorrhagic meningitis, etc., have been reported.

Measles also determine the appearance of peripheric neurites, and among these the most frequent and the most serious is optic neuritis. The author refers to a number of cases in literature and reports the following one: A soldier, 24 years of age, had an attack of measles, with severe bronchitis, high temperature and intense headache on the 12th of September. On the 22nd, when he was convalescent, vision was suddenly and almost completely lost in the right eye. With the ophthalmoscope the papilla appeared punctated as if it had a number of minute hemorrhages on its surface. There was no edema and the disc margins were sharply defined, but the vessels were slightly dilated. In a few days the congestion became more intense, the papilla lost its definite outline and the vessels were more enlarged. No albumin in urine. Left eye normal.

On the 12th of November vision was entirely abolished in the right eye and the ophthalmoscope showed a glistening white disc.

In most cases, as in this one, the neuritis commences several days after the disappearance of the eruption. The infection in this case must have been particularly violent, as the evolution of the disease is not usually nearly so rapid, and in many cases complete recovery has resulted. Generally both eyes are affected.

In view of the violent headaches, the author is inclined to believe that the neuritis had its origin in meningitis. G. C. H.

THE CONDITION OF THE EYES IN EPILEPTICS.—LEE, CHARLES G., Liverpool (*Liverpool Med.-Chirurg Journ.*, January, 1906), reports his observations at the Maghull homes. Each new patient is put under atropin on admission, and the fundus examined ophthalmoscopically, the refraction being measured by the retinoscope. Occasionally atropin is kept up for some days. Of 106 males and 107 females, ranging in age from 15 to 50 years, hypermetropia was found in 47; hyp. astig. in 9; myopia, 19; M. astig., 2; mixed astig., 2, and antimetropia (sic), 5. The correcting glasses were prescribed, but the results have been difficult to determine. Even with ordinary patients it is not easy to ensure regular and constant use of spectacles, while in epileptics it is almost impossible. Accidents due to their attacks occur, and frequently their mental state interferes with resolute continuance in any course. With so many other factors of therapy and aids to improvement, it would be merely a matter of conjecture to assign particular virtues to any one. From time to time a cure of epilepsy has been claimed for this or that method, and, of late, correction of refraction error has been put forward as a specific. While this may be true of some particular patient, we should be easily led into error were we to generalize or conclude hastily that a case is cured. It is not unusual for attacks to recur after months or even years have elapsed. In 10 cases the optic nerves were very pale. Of these, 2 showed signs of an antecedent neuritis, but some presented evidence of a coarse cerebral lesion. Not a single case of retinitis pigmentosa was seen. A strikingly large number of affections of the lens was found in this examination. Out of 218 persons, 23 had lenticular opacity; in 19 out of 23 it was zonular, and 13 of these had either lost their central incisor teeth, or these showed changes characteristic of the "Tidal-Marked Tooth" (Edgar Brown). This concurrence of zonular cataract and epilepsy (like that of tetany) is suggestive as to etiology.

P. H. F.

THE EYESTRAIN ORIGIN OF EPILEPSY.—GOULD, GEORGE M., Philadelphia (*Annals of Ophthalmology,* October, 1905). Three years ago the author examined the eyes of 58 patients at Craig Colony, New York. They all had chronic epilepsy, many were hopelessly diseased. We infer that he prescribed glasses in every case. He gives no data as to the refraction tests, nor does he say if on the average it was great or small. The seizures were lessened by 382 in 19 cases, or 44 per cent., in three months. One case was cured, and another case was cured, but was not reported by the Colony because he left the institution. The author says the results from ocular treatment far exceed those obtained by any other methods. A large part of the article is taken up with a critical analysis of "what is epilepsy?" He believes that one of the discoverable sources of irritation and ingravascent tension is eyestrain. He reviews six cases reported in *American Medicine,* July 15, 1902, in all of which the epilepsy was cured by the use of glasses. A short sketch is given of the work of others who have succeeded in curing epilepsy by the correction of errors of refraction and muscle imbalance.

M. B.

THE COMPLETE ABSORPTION OF A PANNUS TRACHOMATOSUS BROUGHT ABOUT BY TYPHOID FEVER.—TODD, FRANK C., Minneapolis (*Ophthalmic Record,* January, 1906). This was a case of very dense pannus of each cornea which was in the hospital undergoing surgical and local treatment for the lid and corneal condition. Very little improvement had taken place. She contracted typhoid fever. All local treatment was stopped. In two weeks' time the pannus had disappeared, leaving the corneæ clear, with the exception of an ulcer on one cornea which had so thinned the membrane as to allow it to bulge. After it was incised the ulcer rapidly healed. S. Marx White offers the possible explanation of the disappearance of the pannus that the typhoid toxin causes a diffuse endothelial proliferation and these cells become actively phagocytic, taking up red blood cells, lymphocytes and other materials, and that they may have been capable of removing very largely the foreign tissue in the cornea. M. B.

THE EFFECTS OF PROLONGED LACTATION ON THE EYE.—MOULTON, N., Fort Smith, Ark. (*Ophthalmic Record,* March, 1906). The action of prolonged lactation on the mother is to produce anemia; in extreme cases, pernicious anemia. Errors of refraction in the presence of this physical condition may give additional trouble and thus contribute to increased physical deterioration. A case of retrobulbar neuritis is reported in a mother nursing a 14 months old babe. She became temporarily blind in each eye, but made a full recovery after the child was weaned, and she underwent treatment for her anemia with iron, calomel and bitter tonics.

M. B.

GLAUCOMA.

THE TREATMENT OF GLAUCOMA.—HEINE (*Wiener Medizinische Wochenschrift,* March 3, 1906). Inasmuch as the chorioid sometimes is detached after the performance of an iridectomy, the author devised a new method of operating for glaucoma, which he calls cyclodialysis.

The operation consists in loosening the ciliary body and severing the ligamentum pectinatum whereby the aqueous humor flows behind the chorioid. He now makes an incision into the sclera parallel with the corneal margin and at a distance of about 5 mm. from it, and introduces a spatula behind the sclera into the anterior chamber, thus detaching the ciliary body from the sclera.

The essential feature of the operation consists in producing a communication between the anterior chamber and suprachorioidal space, by which the tension of the eye is diminished.

The operation may be performed even in a case where an iridectomy had previously been done. This operation was performed 26 times. In 4 cases it had to be done a second time. In one case of hemorrhagic glaucoma the operation was without success. J. G.

ACUTE GLAUCOMA CONSECUTIVE TO ANTIGLAUCOMA IRIDECTOMY.—OPIN (*Archives d'Ophtalmologie,* February, 1906), states that in chronic simple glaucoma the result of iridectomy is not only *nil,* but sometimes disastrous, as in certain cases it provokes an acute glaucomatous attack followed by a permanent diminution of the visual field. Two cases in which this happened are reported, in one four days and in the other fifteen days after the operation. He believes that attacks of increased tension occurring in glaucomatous eyes after iridectomy are more frequent than is generally supposed, but that the cases are not reported.

These facts do not accord with the theory that attributes glaucoma to obstruction of the iridocorneal angle, but can be better understood if we suppose, with Panas and Rochon-Duvigneaud, that it is due to edema of the vitreous body. We can understand that this edema may occur after an iridectomy by which the ciliary nerves are irritated.

The author thinks we should hesitate to perform iridectomy in chronic glaucoma when the field is very much narrowed, as the benefit to be expected is problematical and the risk is run of producing an acute attack of glaucoma. G. C. H.

Secondary Glaucoma from Spontaneous Luxation of a Congenital, Ectopic Lens.—Moretti, E., Milan (*Annali Di Ottalmologia,* Nos. 11-12, 1905). A patient, 34 years old, without apparent cause, began to have pain in the right eye, with slight redness of the conjunctiva, intense headache in the right frontotemporal region and cloudy vision. Shortly afterward she noticed redness and swelling of the lids. When she came to the hospital the lids were slightly swollen, the conjunctiva showed ciliary injection and the infiltrated cornea projected like keratoconus. The iris was discolored, immobile and showed masses of exudate in its inferior segment. The lens occupied the pupillary field and adhered by its anterior surface to the posterior surface of the cornea. Tension was much increased. In the left eye the lens was luxated below and internally. The papilla appeared double, one image being larger than the other. The lens was removed from the diseased eye, with the result that all symptoms of tension were relieved. From the fact that the lens in the left eye was luxated with no history of traumatism the writer concluded that the glaucoma was the result of the spontaneous luxation of the lens into the anterior chamber. R. H. J.

Closure of the Irido-Corneal Angle in Glaucoma. — De Vries, W. M. (*Tydschr. v. Geneesk.,* Feb. 17, 1906), investigated the methods of closure of the angle of the iris in twenty-four glaucomatous eyes, five of which were primary glaucoma. Without exception in all these cases peripheral closure of the angle was found. But the manner of closure and the extension are not everywhere the same. The angle can be completely closed, so that the iris is found grown together with the entire ligamentum pectinatum and even with the posterior surface of Descemet's membrane. The closure can also be incomplete, so that a part of the ligamentum pectinatum remains uncovered. The angle can be closed totally for its entire circumference or partially, so that the angle is free for a larger or smaller part of the circumference. Incomplete and partial closure may be accepted as earlier stage of complete and total closure. New tissue is occasionally found at the closed angle which receives vessels from the iris. In some cases the iris simply lays against the wall of the bulb, as if pasted to it, and in other cases the anterior surface of the iris stretches, pointing toward the wall of the bulb, so that a spur is formed. In one case inflammation of the angle was found, in other cases pathologic substance, to which an irritating action could be ascribed, was found, and in other cases pushing up of the periphery of the iris could be excluded. Inflammation of the angle was found in one case of glaucoma, with sarcoma chorioidæ, where the largest part of the circumference was closed, but the inferior part of the angle was open, where infiltration with cells in the ligamentum pectinatum, in the wall of the canal of Schlemm and in the processus ciliaris existed. In two cases of glioma retinæ, necrotic gliom cells were seen in the angle of the anterior chamber; these may produce an irritating inflammatory cause. In one case of recent acute glaucoma, which could only be examined incompletely, a distinct inflammatory infiltration in the corpus ciliare and in the chorioid could be found.

In two cases, where the glaucoma was doubtless the result of luxation of the lens into the vitreous body, a perfectly free communication existed through the pupil between the anterior chamber and the vitreous body, as was evident in one case from the presence of opacities of the vitreous body in the anterior chamber and in the second case from the vitreous being fluid, and an incomplete closure of the angle was found. Here nothing could push up the circumference of the iris forward, and therefore another cause of the closure must be looked for.

His conclusions are: Inflammatory changes can be found in the angle of the iris with glaucomatous closure, which closure also can appear without an apparent cause. He does not believe that the closure is primary. For the cases where the angle is not closed, anatomic examination is insufficient; filtration experiments are needed. E. E. B.

INJURIES.

First Aids to Injured Eyes.—Burleson, J. H., San Antonio (*Texas State Jour. of Med.*, March, 1906). Many eyes are lost or permanently injured for lack of proper care immediately after an accident. The first precaution should be the prevention of iritis. All open wounds of the lids should be cleansed and sutured at once, allowing better approximation, and thus preventing deformity. It is well to take it for granted that all lacerated or punctured wounds are septic. All foreign matter must be carefully removed and the wound and conjunctival sac irrigated with a solution of warm bichlorid, 1/1000, or similar disinfectant. Atropin is a valuable aid in almost every variety of injury, unless there be glaucoma. The question of removing a badly injured eyeball is often a delicate one for the surgeon to decide and may require time. P. H. F.

FOREIGN BODIES IN THE CORNEA AND CONJUNCTIVA.—BAKER, A. R., Cleveland (*Cleveland Med. Jour.*, May, 1906). Notwithstanding the protection of the brow, eye lashes, lids, the sensitive nerve endings of the cornea, and the lacrimal apparatus, particles of dust, cinders, chips of metal, small insects, may lodge on the surface of the globe or in the conjunctival sac. The amount of discomfort depends more on the shape than on the size of the body. It may be extreme where a small cinder is carried over the cornea by every motion of the lids, and cause hardly any pain when deeply imbedded in the cornea. Many obscure symptoms may be caused by this kind of injury, so that careful examination is important. Eye lashes and bits of hair may be found in the conjunctival sac, or protruding from the canaliculus. The removal of foreign bodies from the cornea requires a good light, perfect eye sight, steady hand and good judgment. The greatest damage is usually inflicted by unskillful or unclean attempts at removal, licking out the eye, or the use of poultices or eye stones. P. H. F.

FOREIGN BODIES IN THE CORNEA.—CONKEY, C. C., Superior, Wis. (*Ophthalmic Record,* February, 1906). The author has an opportunity of seeing a great many of these simple injuries of the cornea. He is impressed with the ability of the cornea to withstand infection. He has never met with a case of serious corneal infection in 360 minor corneal injuries. Many of these had first been operated upon by fellow workmen. Most of the cases were working in dirty surroundings. On the other hand he has seen two cases of severe corneal infection following the removal of a foreign body by physicians who had not sterilized their instruments. He concludes that it is more likely that infectious germs are to be found upon the instruments of physicians than upon the pocketknives of workingmen. M. B.

THE REMOVAL OF SMALL FOREIGN BODIES FROM THE CORNEA, CONJUNCTIVA, ETC.—ALLPORT, FRANK, Chicago, Ill. (*Iowa Medical Journal,* April 15, 1906). When the foreign body is deeply imbedded, Allport prefers a Graefe's cataract knife for its removal, considering the ordinary spud too blunt and clumsy. He thinks that the brownish eschars formed by hot particles burning themselves into the corneal tissues should be removed by lifting them out with the small knife, and then the underlying tissue should be cauterized with carbolic acid, thus preventing irritation and sometimes ulceration. In recent non-ulcerative abrasions he prescribes a mild antiseptic wash, such as 2 per cent. solution of boracic acid or a 10 per cent. solution of argyrol with cold compresses and eye rest. If the abrasion is infected and some ciliary injection is present, the area is cauterized and atropin and argyrol prescribed, hot water fomentation being freely used. In severe ulceration with marked iritis the same treatment is employed in a hospital, keeping a Credé ointment poultice on the eye at night, with sometimes administrations of pilocarpin or sodium salicylate and the use of subconjunctival injection of a sterile solution. M. D. S.

SOME REMARKS CONCERNING THE CONSERVATIVE TREATMENT OF SEVERE OCULAR INJURIES.—ALLPORT, FRANK, Chicago (*California State Journal of Medicine*). The question of enucleation should be settled within a reasonable time after the injury, and if it is plainly evident that the eye is not going to serve either of the purposes Nature intended for it, vision and beauty, it should be removed. To allow the patient to linger along with the eye slowly going to the bad may result in his finally not consenting to enucleation when urgently demanded.

While the giant magnet has saved more eyes than it has destroyed, at the same time it is to be remembered that its use is not a mere pulling contest, but is one of the most delicate and difficult operations in ocular surgery. The author believes that steel in the posterior segment of the eye should be removed through a scleral incision. He does not believe that wounds of the lens are always followed by cataract.

He pays special tribute to argyrol as an antiseptic in ocular injuries, as well as prior to and after operations upon the eye. The use of Credé's ointment is recommended as a covering for the eye at night, with the daily use of iced applications, antiseptic irrigations, atropin and argyrol. He uses sodium salicylate in heroic doses after the method of Gifford. Daily sweat baths are of advantage for a few days. M. B

THE EFFECT OF FORMALDEHYD UPON THE CORNEA.—SAGER, D. S., Brantford, Canada (*Ophthalmoscope*, February, 1906). One drop of a 40 per cent. solution of formaldehyd was accidentally introduced into the eye of a patient. It was washed out with water within fifteen seconds. No pain experienced until six hours afterward, when the eye became very painful and much inflamed. For a number of days the lids and conjunctiva were edematous. The cornea was steamy. Six months later the patient was seen, when it was found that the cornea was still slightly opaque, with vision reduced more than one-half. M. B.

INCRUSTATION PRODUCED BY PEROXID OF HYDROGEN. — NEUSTATER (*Die Ophth. Klinik.*, No. 2, 1906), is at a loss to explain the sharply defined, yellowish-white streaks which appear on the conjunctival surface of the lid and resemble incrustation of the meibomian glands with dried glandular secretion or lime, after the instillation of peroxid of hydrogen into the eye. He urges that they can not be eschars, as they follow the use of even weak solutions. It may be assumed that the peroxid attacks certain more deeply lying tissues under the epithelium or in the abraded epithelial layer, as the white coloration can come only from the white froth which arises when peroxid is decomposing the tissues. Another thought was that the epithelium was desquamated and attacked by the peroxid, but the affected area had a normal reflex. W. Z.

SOME INJURIES TO THE EYE FOLLOWING SUBCONJUNCTIVAL INJECTION OF SALT SOLUTION.—ALEXANDER, L., Nuremberg. Translated from the German edition, April, 1904, by Dr. A. Braun, New York (*Archives of Ophthalmology*, January, 1906). The author gives the following objections to the use of subconjunctival injections of bichlorid:

"1. It was shown that subconjunctival injections of bichlorid were often badly borne. Eyes which were thus treated often remained in an irritable condition after complete cure of the condition for which treatment was instituted.

"2. There has been no positive proof that in subconjunctival injections the bichlorid reaches the interior of the eye, to act there as a disinfecting agent.

"3. Numerous observations on the eye of the lower animals and of the human being showed that bichlorid acts upon the energy of the lymph currents only in its capacity as a salt by exciting currents of diffusion."

These observations led to the substitution of NaCl for the bichlorid, and equally good results were reported, with fewer complications.

The author gives the clinical histories of three cases in which complications followed the injection of NaCl. In the first case adhesions occurred between the conjunctiva and sclera at the site of puncture. In the second case there was extensive necrosis of the bulbar conjunctiva, followed by peculiar changes in the cornea and lens. The third case also showed peculiar opacities in the cornea and lens, which later disappeared. W. R. M.

THE VISUAL DISTURBANCES RESULTING FROM OBSERVATION OF SOLAR ECLIPSE.—FERENTINOS, S. P. (*Die Ophth. Klinik,* Jan. 15, 1906), has had the exceptional opportunity of studying, in five patients, the visual disturbances resulting from the observation of an eclipse of the sun which took place Aug. 17, 1905. The first patient was seen for the first time August 23 and finally November 8. The others first on September 15 and finally November 2. In all of the cases there were marked ophthalmoscopic changes. By indirect method all recent cases showed a red spot the size of a lentil with a central gray opacity varying somewhat from a pin point in size. This gray spot the author considers due to a lack of transparency, an opacity of the tissues upon which was formed the image of the sun. The surrounding red area is due to the thinness of the retinal tissue at the macula. While the red spot is due to the same cause as the red spot in embolism, it is not so intense and not uniform, containing a central gray spot. Later this gray spot disappears. By direct method the position of the fovea appears of a normal whitish reflex with frequently a dark spot. If the normal reflex is not present then we have an opacity resulting from the eclipse in the form of a faint gray or faint red spot, not always round, but unaffected by movements of the mirror. The red ring surrounding the gray spot is only observed in old cases. It was not always round at the beginning, but often irregular, with an outrider to the temporal side. Later with the fading of the gray spot the encircling red line likewise disappeared. The regression of the opacity begins in the periphery and progresses toward the center. At times the regression takes place uniformly over the entire spot. The author's observations here differ widely from those of Dufour, who found that the regression never begins at the periphery.

The functional changes are from the beginning characteristic. They are: 1. Reduction of visual acuity; the central scotoma. 2. Optical exhaustion. The first sensation of the patient is a blind-ing; following this there appears a positive scotoma and later a negative one. The author considers the negative after-image a pure psychic incident, the mind judging the normal brightness by the intensity of the impression made by the light. The diminution of central vision affects proportionately color and white, differing in this respect from toxic amblyopia. For many days the patients complain of asthenopic symptoms with fading of the type while reading. The author thinks this is purely functional and has no relation to the retinal disturbance. Time is the only cure. W. Z.

INJURIES TO THE EYE CAUSED BY INJECTION OF PARAFFIN IN THE REGION OF THE NOSE.—ROHMER (*Wiener Klin. Therapeutische Woch.,* Jan. 28, 1906). In a case of "saddle" nose, where the attending physician was ignorant of the technic of injecting paraffin, the cosmetic effect was much worse after the injection, because not only did the "saddle" nose retain its original shape, but there also appeared two paraffin tumors on both sides of the root of the nose, and besides this the power of vision of one eye was entirely lost. An oculist who examined the patient found an embolus of the arteria centralis retinæ. The author, however, could not corroborate the diagnosis, because he found a clear picture of a thrombosis of the vein. He does not consider an embolus of the central artery the cause of blindness after paraffin injection, but he thinks that in these cases there is always a thrombosis of the central vein, which can easily be explained anatomically, inasmuch as in the inner angle of the eye there are always extensive communications between the nose, facial and orbital veins. In order to avoid accidents the following precautions must be taken:

1. Paraffin which melts at a low degree of 41° or 42° only should be employed.
2. Pressure during the injection is to be avoided.
3. The injection is to be made through a thick canula, so that piercing of a vein would be rendered more difficult.
4. An assistant should exercise strong compression at the angles of both eyes, thus preventing the injection of paraffin into the orbital veins.
5. A very small amount should be injected at one time: only from 1 to 1.5 c.c. J. G.

NECROSIS AFTER INJECTIONS OF SUPRARENIN.—STARGARDT, DR. (From the eye clinic of Professor Voelckers in the University of Kiel. *Klin. Monatsbl. fuer Augenh.,* 1906, I, p. 213). At the clinic at Kiel general narcosis is employed almost exclusively in exenterations, enucleations and major operations on the eyeballs of children. In other cases, especially in the frequent extirpations of the lacrimal sac (50 to 60 per annum) it has been superseded by local anesthesia with 1 per cent. cocain to each cubic centimeter, of which one drop of suprarenin is added. In two cases, however, of extirpation of the tear sac, in which 1.5 c.cm. of 1 per cent. cocain solution, containing 0.4 c.cm. (= 8 drops) suprarenin, had been injected into the tissues, severe necroses resulted. Peculiar were in both cases profuse hemorrhages during and after operation and the belated anemia, which grew so intense that it led to necrosis. On the third day the whole side of the face of the first patient was swollen and anesthetic, and on the fifth day the wound ruptured. showing the whole region, which had been infiltrated with the solution, necrotic, the bone bare. The necrotic parts. however, did not slough, but were organized from the surrounding tissue, so that the defect was closed after three weeks. The general intoxication consisted in palpitations of the heart and oppressive feeling one-half hour after operation, but disappeared after an hour. The second case was analogous, but presented no general symptoms. Probably the suprarenin preparation had undergone changes, which, however, could not be ascertained. S., therefore, recommends not to employ ready-made solutions, but to prepare them from tablets immediately before use. C. Z.

CATARACT AND OPTIC NERVE ATROPHY.—MORTON, JOHN P., Hamilton (*The Canadian Practitioner and Review,* February, 1906). The history of the case reported is as follows: When 2 years old a sharp-pointed stick ran into left eye and some of the fluid ran out. Treated in London, England. About two years after accident she began to lose the sight in right eye and in a short time could not see at all. Is now 32 years old. Had been examined by number of specialists and all said operation on right eye would be useless. Examination showed left eye to be atrophied and aneurotic. The right eye had a mature cataract, and by examination with a sixteen-candlepower lamp had neither perception nor projection of light. She said that sometimes she thought she saw light. Advised against cataract extraction, but at patient's earnest request did operation at Hamilton General Hospital. The cataract came out nicely, but the patient immediately afterward said she could not see light. Eye healed quickly. Was frequently under observation during the two following months, and she thought she was gradually "commencing to see." Instructed to hold certain objects in good light and study them with her eyes while she handled them.

Although difficult of explanation, the patient gradually regained her vision, until it reached 6/xxvi, with + 9 D. sp., + 3.5 D. Cyl. axis horizontal. She is now working and has written several letters.

The results in this case are surprising and undoubtedly contrary to what the classic tests in regard to light projection and perception would allow us to expect.

Two years after the injury, and with the left eye in a condition of phthisis bulbi, there commenced in the right eye an optic neuritis, and probably a sympathetic plastic iritis, as indicated by some posterior synechiæ; following this the lens gradually became cataractous. The optic nerve was not completely destroyed, but either the optic nerve or the occipital centers forgot their functions so far as not to answer to an electric light. Even after the cataract was removed perception and projection of light were absent. With the light striking again directly on the fundus, the nerve and occipital centers seemed gradually to resume their functions. Remembering this case, we should be more backward in advising against cataract removal when the projection and perception tests give negative results.

Perhaps the explanation lies in the early age at which the sympathetic optic neuritis arose, there remaining a considerable period of development after this injury to the nerve. This newly developed nerve tissue never experienced the light, except in so far as this traversed the cataract, and had to learn its function after the extraction. Perhaps the occipital centers would have the same experience to go through. F. A. AND P. G.

CONTUSION OF THE EYE WITH SUBSEQUENT DETACHMENT OF THE RETINA.—WEILL, GEORGES, Strassburg (*Zeitschrift fuer Aug.*, 1906, XV, p. 140), reports two cases of contusions of the eyeballs of healthy emmetropes by weights of several pounds falling from considerable height, in which the symptoms of detachment of the retina set in two, respectively four, weeks later. Although spontaneous detachment of the retina may occur in emmetropes and hypermetropes (W. had at the same time two such cases under treatment), the solution was undoubtedly the direct consequence of the accident. W. leaves it undecided whether the separation of the retina in these cases starts from a peripheral rupture of the retina, which can not be detected with the ophthalmoscope, or whether, according to Pfalz, a peripheral detachment takes place immediately after the injury. He advises, however, to treat patients with severe contusions of the eyes with rest in bed, even if the first examination does not reveal changes in the fundus, on account of their dubious prognosis and threatening detachment of the retina. C. Z.

A Case of Electric Ophthalmia.—De Haas, H. K. (*Tydschr. v. Geneesk.*, Feb. 24, 1906), treated a machinist who had his face burnt by a strong electric spark through a short circuit; his eyelids were much swollen, the conjunctiva very red; some perception of light in the right eye, blind in the left eye; after some time he could again count fingers with the right eye, and after a week light perception in the left eye reappeared. De Haas saw patient for the first time five weeks after the accident; conjunctivæ were slightly hyperemic, some pericorneal injection, a few streaks of corneal opacities and the flat, sharply defined discs too white; the retina was normal; much photophobia and lacrimation; vision after correction for the right eye 5/10, for the left 5/30. The visual fields were both narrowed, colors (yellow and blue) on the right side seen with difficulty, on the left side no color vision whatever. Seven weeks later the vision on the right eye was fingers in 3 meters, on the left eye at 0.5 meter; still much photophobia. E. E. B.

Cataract Caused by a Discharge of Industrial Electricity.—Ellett, E. C., Memphis, Tenn. (*Ophthalmic Record*, January, 1906). This patient, a male, aged 35, received a shock from a direct current of 500 volts. A short circuit occurred with holding an end of the cable in each hand. Muscular contraction of his arms caused him to receive most of the burn on the left side of his face. He was blinded by the flash, but an hour after his vision was 20/40. The right eye presented marked conjunctivitis, with iritic congestion. In a fee days the eye was free from congestion, with vision 20/20. Three months later he returned with O. D. V. = 20/200. Pericorneal injection and discolored iris. Pupil dilated with atropin and numerous small white dots observed in the lens beneath the capsule. No sugar in urine. In a few days the eye was white. In twenty days the lens was almost opaque and two months later it was entirely opaque. A short review of the reported cases of others is appended. M. B.

INSTRUMENTS AND METHODS OF EXAMINATION.

Improved Surgical Methods for the Successful Use of the Electro-Magnet.—Sattler, Robert, Cincinnati (*Transactions of the American Ophthalmological Society*, 1905). Sattler, while praising the work of Haab in this line, urges for a minority of cases, in which Haab's method is not successful, the accurate localization of foreign bodies by means of the *x*-ray and Sweet's localizing apparatus. The sclera is then to be incised at a point nearest to the estimated location and the foreign body removed by magnet. In the discussion following this paper the majority of the speakers favored this method of removing foreign bodies, rather than the method of Haab. One of the chief objections raised against incision of the sclera, separation of the retina, had not been observed to follow by the majority. E. E. J.

A NEW SCOTOMETER.—SMITH, PRIESTLY, Birmingham, Eng. (*Brit. Med. Jour.*, March 17, 1906). This scotometer was designed for the diagnosis of glaucoma and for other purposes. It was intended to facilitate the examination of the central parts of the field of vision, especially in cases of suspected glaucoma. It consisted essentially of a disc of millboard covered with black cloth and figured on the back with the degrees of the circle. The test object was a small cutting of grey wool which was laid upon the cloth at any desired distance from the centre. In the case of suspected glaucoma it should be placed at 25° from the center, as shown by a faint mark on the cloth, and the disc should then be slowly rotated. Should it nowhere disappear or grow dim in all probability glaucoma does not exist, for, as Bjerrum had shown the defect in the glaucoma field was almost always radical or sector like, and, with a delicate test could be traced inwards. If a defect was found its extent should be noted on the graduated circle so that it could be used for future comparison. Other circles could be explored if necessary. C. H. M.

THE ARMED SOUND.—HAAS, VIERSIN (*Woch. f. Therap. u. Hyg. d. Aug.*, No. 18, 1906), extols the use of this therapeutic instrument. It consists of a solid silver probe to which has been given a medicinal coating. The agent used is usually melted nitrate of silver. It is of value in ulcerative and angular blepharitis, corneal ulceration. For touching the corneal limbus after the removal of a pterygium, lacrimal fistula, cauterization after curettement of a chalazion where extirpation can not be done. The author has gotten up a case containing a tube for the silver, a narrow tube and holder with silver top in which to fuse the mineral and several sizes of probes provided with handles. The method of procedure is to melt a small quantity of silver in the tube. Into this, the probe previously warmed, is plunged and rapidly withdrawn. The silver almost immediately sets, giving a smooth coating to the sound. After use it may be readily cleansed with water. W. Z.

THE GALVANOCAUTERY PROBE FOR THE LACRIMAL DUCT.—PESCHEL, M., Frankfurt a. M. (*Deutsche Med. Woch.*, 1906, No. 12, p. 465), describes an improved model of his galvanocautery probe, devised in 1894 (*Centralbl. fuer Aug.*, p. 229). It is 1.5 mm. thick and has the electrode of platina, not at the end, but near it, on the side. Since, by closing the current, the whole probe becomes diffusely heated, the glowing ought not to last longer than one second, but may be repeated 10 to 15 times at the same sitting. In P.'s experience the galvanocauterization of the lacrimal duct is the best of all conservative methods in chronic affections and strictures. The probe is manufactured by Reiniger, Gebbert and Schall, Erlangen, Germany. C. Z.

A LACRIMAL SYRINGE.—WILDER, WILLIAM H., Chicago (*Ophthalmic Record*, Jan., 1906). This syringe has a glass barrel partially encased in a metal jacket. The piston is made of wrapped asbestos string, and expands by turning the piston rod upon a milled screw. It can be boiled and the piston is easily replaced when worn out. M. B.

A NEW DEVICE FOR ILLUMINATING AND CONTROLLING THE INTENSITY OF THE ILLUMINATION FOR THE AMBLYOSCOPE.—BLACK, NELSON MILES, Milwaukee (*Ophthalmic Record*, Feb., 1906). F. A. Hardy & Co. have made illuminating boxes containing a four candle power lamp which are to be attached to the amblyoscope at its distal ends. These lamps are supplied with current through a rheostat which controls the illumination of each lamp. M. B.

A NEW TRIAL CASE.—STEVENSON, MARK D., Akron, Ohio (*Ophthalmic Record*, Jan., 1906). The features of difference between this trial case and those generally in use are:—The strength of the lens is stamped on both sides of the handle. The cylinders do not have ground opaque sides, but are plain like the spheres. They are to be distinguished from the latter by the shape of their handles. The axis of the cylinder is indicated by a hole ground half through the lens near its margin and then filled with white wax. There is a distinct scratch extending from the edge of the hole to the margin of the lens. M. B.

A MEANS OF TIME SAVING WHEN REFRACTING.—LAKIN, H. P., Philadelphia (*Ophthalmic Record*, Feb., 1906). Three lenses are set in one handle, in combinations of —.25, + .25 and a plano. The same combinations are used with a plano only the plus and minus lenses may be greater or lesser in their strength. The author uses these lenses to add to or subtract from the lenses already before the patient's eyes in the trial frame. He finds it much handier than doing this same thing with trial case lenses. M. B.

ON CLINICAL METHODS OF EXAMINATION OF COLOR SENSE.—COLLIN, R. (From the eye clinic of Prof. von Michel in the University of Berlin. *Zeitschrift fuer Augenh.*, 1906, xv, p. 305), discusses the insufficiency of the perimetric tests with small colored objects and of Holmgren's skeins, as both may yield opposite results in the same case. For clinical diagnosis only such methods are admissible, which allow of separate testing of central and peripheral color perceptions. This is obtained by means of the electric perimeter of von Michel. The test objects, illuminated by an electric lamp, consist of two round, rotable discs. The lower contains five glasses of different colors (green, yellow, red, blue, white), as much saturated as possible by combination of a number of differently colored glasses, and equivalent as to light adaptation. The upper disc has six square-shaped holes with sides of 1, 2, 5, 10, 15, 30 mm. length, in order to change the sizes of the underlying colored fields. An exclusively focal fixation is insured by setting the carrier with the square of 4 mm. on the point of fixation of the perimeter, a small plate of ivory. For ascertaining the peripheral borders the areas of 100 mm. are recommended. The color of the perimeter itself is grey, not black, to secure a neutral background and to avoid contrasts.

At von Michel's clinic, every patient with disease (or suspected) of the fundus, is first examined with the color equation apparatus of W. Nagel for the central color sense and then with the electric perimeter for ascertaining the peripheral borders for green, yellow, red and blue. The test objects of Nagel's apparatus consist of semicircles of colored glass on revolving discs, illuminated by an Auer burner. According to the principle of color equation, the second objectively different color field of the same denomination, given by the patient to the first color field, is placed next to this under variation of illumination until both are pronounced equal. This gives a much more reliable test than any other. With this apparatus C. was enabled to diagnose 3 cases of violet blindness (tritanopia), to be published later. He also found that in alcoholic optic neuritis the perception of blue is relatively well preserved, even if V. has sunk to counting figures at 1 mm. C. Z.

ASEPSIS OF INSTRUMENTS, DRESSINGS AND MEDICAMENTS IN OPHTHALMOLOGY.—GROSSE, R., Muenchen (*Klin. Mon. fuer Augenh.*, 1906, i, p. 219). The various methods of asepsis, so far practiced in ophthalmology, consist in combinations of several sterilizing procedures. To unite them in one, G., devised an "Ophthalmological universal sterilizer." which is described in detail (manufactured by C. Stiefenhofer, 6 Carlsplatz, Muenchen.) It consists of a square box of nickeled brass with three chambers, the lower for dressings, the middle for solutions and the upper for instruments. The disinfection is effected by steam of 100°. To protect the knives and other instruments of steel against rust, they are. on metallic trays, placed into glass tubes, closed tight, so that no steam can enter. G. found that knives infected with fresh cultures of staphylococci. enclosed in these tubes were rendered sterile after 10 minutes. It seems that the small amount of steam of the atmospheric air in the tube is sufficient to bring about a regular steam sterilization. This sterilizing steam is always condensed on the specially colored glass, never on the steel of the knives, which has a higher capacity of heat, so that they remain perfectly intact.

C. Z.

PROCEEDING FOR THE RADIOGRAPH LOCALIZATION OF FOREIGN BODIES IN THE EYE AND ORBIT.—HOLTH, CHRISTIANA (*Annales d'Oculistique*, December, 1905). Holth describes his method of localization, in which he uses as indices two little planoconvex buttons of lead, 2 mm. in diameter, fixed by sutures to the conjunctiva of the corneal margin.

G. C. H.

IRIS.

DELINEATION AND BLOOD VESSELS OF THE IRIS.—KOERBER, H. (From the eye clinic of Prof. J. Hirschberg, Berlin. *Zeitschrift fuer Aug.*, 1906, xv, p. 110). The trabecules and ridges of irides with scanty pigment supply are blood vessels. Not unfrequently the blood column is visible. The blood column appears very thin on account of the thickness of the walls of arteries and veins of the iris in comparison to their lumina. In pigmented irides the interstices between the blood vessels are more or less filled by well developed stroma which hides the vessels. Under pathological conditions blood vessels of the iris are discernable: 1. New formed vessels in iritis and glaucoma. Their course varies from the normal, is tortuous, their walls are very thin and not perceivable. 2. From incomplete formation of the anterior stratum of the iris almost normal vessels with thick walls and thin blood columns become more noticeable. 3. Blood vessels with thin walls and broad blood columns, forming a kind of angioma. K. describes a case of each of the latter, two categories, very well illustrated on colored plates.

C. Z.

LACRIMAL APPARATUS.

A RARE FORM OF CONCRETION OF THE LACRIMAL CANALICULUS.—CAPELLINI, C., Parma (*Annalli Di Ottalmologia,* No. 11-12, 1905). In January, 1894, a patient presented herself at the clinic for cataract operation. A swelling as large as a pea could be seen near the right inferior lacrimal punctum of the aspect of a small cyst. Pressure at the internal angle on the inferior punctum was followed by the escape of a little pus. Some pus escaped after incision of the canaliculus. A larger incision revealed some concretions. The swelling disappeared, the wound healed rapidly. The concretions were hard, of a green color and covered with pus. The two largest measured 4x3 and 3x2 mm., respectively. Chemically they were composed of carbonate of calcium and phosphates.

R. H. J.

LIDS.

PRECOCIOUS TURNING GRAY OF THE CILIA WITH REMARKS ON THE SO-CALLED OCCURRENCE OF THIS AFFECTION.—VOGT, ALFRED (From the eye clinic of Prof. C. Mellinger, in the University of Basel, *Klin. Monatsblätter fuer Augenheilkunde,* 1906, p. 228), observed in a man, aged 18, who had been under his treatment for iridocyclitis of both eyes for nine weeks (the affection had commenced five weeks previously), a marked white discoloration of almost symmetrical tufts of the cilia of both upper lids, the lids and glands being normal. Some of the white cilia were outgrown, others short, and showed white apices on pigmented bases. The poliosis progressed within the following three weeks. No cause could be found, but an indirect one in the iridocyclitis.

A review of the incident literature shows a connection of poliosis of the cilia were severe iridocyclitis, especially sympathetic, in 39 per cent. with migraine in 11 per cent., with cold in 5 per cent., with no complicating disease in 39 per cent. V. studied on his patient the development of the white and pigmented cilia by epilating a portion of them and by cutting another portion close to the skin. Some of the latter, which apparently were outgrown, did not return, others sprouted rapidly and had points, i. e., were young cilia which had not been reached by the scissors. The clipped, not outgrown, gray cilia retained their discoloration in growing, and those reappearing at the places of the epilated gray cilia were without pigment. However, they came more slowly and were thinner than the pigmented ones.

Hence V. concludes that the premature poliosis of the cilia depends upon the lack of pigment supply from the papilla. It is a gradual, not a sudden process, but the "trophic" disturbance may be due to neurotic or circulatory anomalies. C. Z.

ACUTE ANGIONEUROTIC EDEMA OR QUINCKE'S DISEASE.—MAZZA, A., Genoa (*Annali Di Ottalmologia,* No. 11-12, 1905). A woman, 45 years old, was alarmed by a swelling of the left eye which caused no disturbance, except inability to open the lids. The swelling was a true edema of the lids—the skin showed no discoloration or wound. The conjunctiva was intact. The patient was profoundly anemic and had reached her climacteric. She had pruritus on the backs of the hands, the knees and the labia majora. The edema disappeared under astringent applications. The trouble was due to vasomotor changes from anemia and the critical time of life. The attacks continued to recur every week for about 2 years, or until menstruation ceased. The second patient, at the age of 16 years, was attacked one evening with swelling of the right eye and partial aphonia without pain or cutaneous alteration. The lids and vocal cords were edematous. Astringents caused the symptoms to disappear promptly. The attacks recurred for 2 years at irregular intervals. In a third case edema appeared at intervals for 5 or 6 years, with a duration of from 12 to 24 hours and left behind a pruritus which disappeared in a few hours. Quincke believes the edema to be caused by an angioneurosis from some disturbance of the vasomotor system, having its point of departure either in the central nervous system or in a peripheral excitation. The result of this is the dilatation of the small vessels and the tumefaction in the skin. R. H. J.

BLEPHAROCHALASIS.—DE BERARDINIS, D., Naples (*Annali Di Ottalmologia,* No. 11-12, 1905). This affection is inability to raise the upper lid sufficiently. In a patient, 30 years old, the trouble had appeared 10 years before without apparent cause. The lid felt heavy, especially after sleep. There was no pain. The chief trouble consisted of a state of ptosis which interfered with sight. The condition was not due to a falling of the lid or a weakness of the levator but to a lengthening of the transverse cutaneous folds of the lid which fell about 2 mm. below the ciliary border. The skin was soft and had lost its elasticity. In a second case, 13 years old, the same conditions were observed, but less accentuated. The author removed a rectangular piece of skin with some subcutaneous connective tissue and a few orbicularis fibers from the level of the tarsus and brought the edges of the wound together. The results were perfect. R. H. J.

SYNERGY OF THE UPPER EYELID.—MUNTENDAM (*Tydschr. v. Geneesk.*, Feb. 24, 1906) described a 47-year-old lady, who came to the clinic for glasses, with congenital ptosis, a paralysis of the levator palpebræ superioris with a limited motility upward of the bulb. When she moves her under jaw to the left and clinches her teeth together she lifts the paretic eyelid. Discussion. Straub had a 20-year-old patient, who had her eye closed since she was 6 years old with poor vision; ptosis, paresis of the rectus superioris and diplopia apparently existed. On command she can entirely open the eye. Straub believes that a spasm of the orbicularis is present, not a ptosis. Piekema himself is a sufferer from this condition, but thinks that he does not show ptosis. Blok saw several cases of synergy and contradicts Straub's opinion by pointing out that good lifting of the upper eyelid after strong excitation does not plead in favor of spastic ptosis, neither does it against paresis of the levator palpebræ superioris. Nicolai saw a similar case without ptosis. Schoute thought that spastic ptosis can exist in such cases. Snellen, Jr. pointed out that both levators are equally innervated, but that his innervation can be made easily unequal through exercise, so that spasm is not demonstrated in such cases. E. E. B.

MATERIA MEDICA AND THERAPEUTICS.

THE USE OF ATROPIN AND DIONIN IN POSTERIOR SYNECHIA.—v. ARLT, Wien (*Woch. f. Therap. u. Hyg. d. Aug.*, No. 13, 1905), has secured the best results in the treatment of old broad synechia by placing in the conjunctival cul-de-sac, first, powdered atropin salicylate, followed by dionin in powder in seven minutes and putting the patient into a dark room. He believes that in this way the synchronous action of the drugs is obtained. W. Z.

DIONIN IN DISEASES OF THE EYE.—RYERSON, G. STERLING, Toronto (*Canada Lancet*, Jan., 1906), reports a case of severe binocular iritis, where the use of atropin, belladonna fomentations, leeching and salicylate of soda afforded but little relief. A 2 per cent. solution of dionin was used with amelioration of symptoms and a rapid recovery, with the exception of a few tags of adhesion.

A second case is as follows: A boy, aged 6, was struck in left eye by a stone. The cornea was penetrated and traumatic cataract occurred, the anterior chamber being nearly filled with lens matter when first seen, a week after the accident. Atropin and dionin were used separately. The disappearance of the lens matter was rapid. Later the lens was further broken up by needling and dionin was again used with most gratifying results. Four weeks after the accident the pupil was clear. He also used dionin after extraction of senile cataract, where some soft matter was left behind, with good results. Is now using dionin, 5 grains, combined with 1/6 grain of eserin in nearly all cases of extraction. He also used it with good success in opacities of cornea accompanying interstitial keratitis after the acute stage had passed, and is confident the long process of clearing has been shortened. In opacities of the vitreous he has had good results. In a case of recent hemorrhage there was striking improvement. A small boy was shot in the eye by an air gun. The anterior chamber and vitreous was filled with blood, vision being reduced to light perception. In four days the blood had entirely cleared up, and fundus could be distinctly seen.

F. A. AND P. G.

THE THERAPEUTIC VALUE OF ESERIN IN OPHTHALMIC PRACTICE.—BRAV, AARON, Philadelphia (*Therapeutic Gazette,* February, 1906). Discovered by Vee and Deven, in 1864. Introduced as a therapeutic agent in ophthalmic practice by Argyll-Robertson, in 1865. Its chemical properties and physiological action on the pupil of the eye are discussed at some length. It has not been settled if it causes myosis through irritation of the third or paralysis of the sympathetic terminal fibers. Its action is at its height in 40 minutes. The punctum remotum and punctum proximum are removed equally close to the eye, and the range of accomodation remains the same. As the action of the drug decreases, the range of accomodation increases because the punctum remotum returns sooner to its original place than the punctum proximum. The punctum remotum returns to its normal position in 6 hours, while the punctum proximum does not return to its normal position until after 24 hours. The refraction of the emmetropic eye is, therefore, rendered temporarily myopic. During the height of its action objects seemingly appear larger, due to the disturbance of accomodation. The indications and contradictions for the use of eserin are gone into at some length, but are familiar to us all. M. B.

GUAIACOL IN OPHTHALMIC THERAPY.—TERSEN (*Die Ophth. Klinik,* No. 2, 1906) has found that the antiseptic, alterative, anesthetic, analgesic action of guaiacol is of service in diseases of the eye. As an application to the skin a 10 per cent. solution in oil or glycerin, either alone or in combination, in oily solution, with camphor or menthol, will be found useful in herpes zoster, furunculosis, phlegmonous dacryocystitis, etc. As a conjunctival application he employs a mixture of copper sulphate and guaiacol, each one part to 20 parts of glycerin. In burns he uses a solution of atropin (the alkaloid) in sterile chemically pure oil to which may be added guaiacol, menthol and camphor 1/20. Internally and intramuscularly it is of use in scrofulous tuberculous and syphilitic eye affections. W. Z.

ITROL CREDE FOR OPHTHALMIC USES.—v. ARLT, Vienna (*Woch. f. Therap. u. Hyg. des Aug.*, No. 17, 1906), based upon his experience with this drug, concludes: 1. It should be employed in phials of 0.5 gr. in private or 1 gr. in large dispensary service. 2. Immediately after use the bottle must be stopped with a good-fitting cork. 3. A phial lasts at least three days in the treatment of corneal ulcers and conjunctival inflammations with scant secretion. If, however, as in acute blennorrhea, the secretion is profuse, a phial will last five days. W. Z.

EXPERIENCE WITH LENICET-VASELIN.—WOLFFBERG, Breslau (*Woch. f. Therap. u. Hyg. des Auges,* March 15, 1906), has employed lenicet in the form of a 10 per cent. ointment. He has used it successfully in cases of blepharitis ulcerosa when mercurial salve has not been well borne (which was not often the case). It is to be spread upon borlint and laid upon the eyes during sleep. The same method is employed in burns of the skin of the lid and in excoriation of the angles of the lids. It is of value in follicular conjunctivitis and as an adjunct to some salt of silver in ophthalmia neonatorum and in croupous conjunctivitis. It is of service in the treatment of ulcerative keratitis but is never to be used to the exclusion of other remedies. It is useful as a vehicle for scopolamin or atropin (½ per cent.) or cocain (2 per cent.) either with a bandage used for from 5 to 10 minutes or permanently.

ALYPIN IN OPHTHALMOLOGY.—TRUC (*Revue Generale d'Ophtalmologie,* March 31, 1906). Alypin, for which we are indebted to Impens (1905), is a new local anesthetic derived from glycerin. Truc states that alypin has been studied by Impens, Seeligsohn, of Berlin, Darier, Gallemaerts and Wibo, of Brussels. It is a white crystalline powder, very soluble in water, and can be sterilized by short boiling if slightly alkaline. It may be rated with cocain—possessing many advantages with few inconveniences. Cocain instillations or injections rapidly produce insensibility of the tissues but the drug is relatively toxic. Anesthesia of the cornea and conjunctiva is had from alypin in a few minutes when in 1, 2, 4, or 5 per cent. solutions, more rapidly in stronger per cent. The anesthetic effects last sufficiently long, 10 to 15 minutes or longer, when the instillations are repeated.

With regard to interstitial anesthesia, Truc has compared the effect of both alypin and cocain of same strength and is unable to find any appreciable difference, the toxic effect being less from alypin than cocain. With alypin there is no mydriasis, even with strong solutions. Tonus and accomodation are not changed by alypin. It is important that the solutions should be neutral, acid ones being irritating. B. E. F.

The Use of Stovain as an Anesthetic in the Operation of Entropion on the Lower Lid.—Santos, Fernandez (*Revue Generale d'Ophtalmologie,* March 31, 1906). The writer prefers Panas' operation and injects 50 centigrams of a 2 per cent. solution of stovain which renders the incisions painless; and he calls attention to the fact that the anesthetic area produced by stovain is peculiarly extensive; and that there is no danger from syncope, which, as is well known, is one of the risks from hypodermic cocain. The author details three entropion operations in which the hypodermic stovain solution was employed. B. E. F.

Action of Chrysarobin on the Eye.—Krause, Richard, Koenigsberg i. P. (*Zeitschrift fuer Aug.,* xv, 1906, p. 233). The affections of the eyes due to the action of chrysarobin, so far published, were primary catarrhal inflammations of the conjunctiva, eventually with secondary changes of the cornea. This is corroborated by an observation of K. given in detail. In his two other cases, however, the keratitis was primary. In one case it consisted in a ring-shaped opacity of the parenchyma, resembling the annular, central, vascular, parenchymatous keratitis, described by Vossius, but of more acute character. The opacities in the third case formed furrows in radial arrangement, and were similar to herpes. Whether these affections are characteristic of the action of chrysarobin, can only be decided by observations on a larger material.

C. Z.

Clinical and Experimental Contributions to Subconjunctival Injections.—Vederame, Ph. (From the eye clinic of Prof. C. Mellinger in the University of Basel. *Zeitschrift fuer Augenheilkunde,* 1906, xv.) After a very exhaustive review of the incident literature, V. reports in detail nine experiments on rabbits, in which the actions of subconjunctival injections of cyanate of mercury, oxycyanate of mercury (1/500), each with and without admixture of acoin (1 per cent.), salt solutions with acoin on one eye were compared with the effects of 4 per cent. salt solutions on the other eye. Then the actions of cyanate and oxycyanate of mercury on one eye, with addition of acoin on the other, were repeatedly studied, further on one eye oxycyanate, on the other oxycyanate in salt solution 2 per cent., and finally 10 per cent. salt solution on one, 4 per cent. salt solution on the other eye.

The casuistic part embraces 323 cases treated at the clinic with subconjunctival injections of 2 per cent. salt solutions; in 155 cases ofaffections of the cornea, of 4 to 10 per cent. solutions, in diseases of the deeper structures, i. e., 19 cases of retinitis pigmentosa, 32 of detachment of the retina, 26 of affections of the vitreous and 12 of various other eye troubles. According to the indications in the single cases, the injections were made daily or every two or three days.

V.'s conclusions are:

Observations on men and repeated experiments on rabbits show that a minimal addition of acoin (1 per cent.) to subconjunctival injections produce changes of the ocular conjunctiva, from intense inflammatory chemosis to necrosis of the conjunctiva with subsequent cicatrization and obliteration of the conjunctival sac.

Subconjunctival injections of cyanate and oxycyanate of mercury cause alterations of the conjunctiva and subconjunctival space similar to those observed after injections of corrosive sublimate, so that they can not be recommended.

Controlling experiments demonstrated that mild salt solutions set up very slight irritations of the conjunctiva which soon disappear without doing harm. They yield just as good results as the solutions of the above mentioned mercurial preparations, without sharing their injurious properties. In concordance with the reports of Marti, Zehender and others, V. confirms the favorable effects of injections of salt solutions in destructive processes of the cornea, especially hypopyon-keratitis. They act beneficially in recent cases of retinitis pigmentosa and detachment of the retina. Frequently a partial, in some cases a total reattachment of the retina was observed. The absorbing power of subconjunctival injections of salt solutions is of good service in exudations and hemorrhages into the vitreous, of not too long standing, and as adjuncts to remedies of similar action in cases of other eye affections of inflammatory and exudative character. A bibliography of 202 numbers complete this interesting and valuable essay. C. Z.

FURTHER COMMUNICATIONS ON CREDE'S SILVER THERAPY IN EYE DISEASES.—MEYER, Tsingtau, China (*Centralblatt for Augenh.,* 1906, p. 33). Among the Chinese in the territory under German protectorate and Schantung, two eye diseases are very common; purulent conjunctivitis and trachoma, due to the incredible lack of cleanliness. Hence, the great number of the blind, of people with leucoma, staphyloma, pannus, corneal ulcer, immense pterygium. Therefore chiefly antiseptic treatment is indicated. Instead of itrol, which proved inefficient on account of its instability in that climate, M. used collargol and had excellent results with 5 per cent. instillations, combined with massage, and internal administration of 1 to 2 per cent. solutions, 1 teaspoonful every one or two hours. In proper cases collargol is of sure action and applicable in any climate. C. Z.

On the Treatment of Hemeralopia with Liver Substance.—Von Sicherer, Muenchen (*Berl. Klin. Woch.,* 1906, No. 12, p. 375). Although the treatment of hemeralopia with liver substance is known for ages, v. S. reports a case on account of its remarkable result. A cabman, aged 45, who habitually drank considerable quantities of beer, had excellent vision in day time, but could not even see the head of his horse in the evening. He was otherwise healthy, especially his liver showed no changes. His condition improved within a few days after eating daily 300 to 400 grams of liver substance to such an extent that after a week his hemeralopia had entirely subsided. von Sicherer prefers cooked liver, which has the same effect as the raw and is better adapted for continued use.

C. Z.

Treatment of the Hemeralopia with Liver.—Fabry H., German East Africa (*Berl. Klin. Woch.,* 1906, No. 3, p. 91). On an expedition into the Matombi mountains, a guide, aged 33, showed symptoms of hemeralopia, which had suddenly commenced three months previously and had become very marked during the last four weeks. After daily taking 200 grams of raw sheep's liver for three days a most striking improvement took place, the patient could see in the dark as well as three months before. This good result continued for a week, when F. lost sight of him. C. Z.

On the Treatment of Trachoma with Radium.—Jacoby. E. (from the eye clinic of Prof. Uhthoff in the University of Breslau. *Deutsche Med. Woch.,* 1906, No. 2, p. 61), reports 11 cases with the following summary: 1. Radium seems to exert a certain influence on trachoma. 2. It has not yet been determined how far this may be favored by other factors of treatment (radium massage, hyperemia). 3. The results of radium application are inferior to those obtained from mechanical and medicamentous treatment as to safety and durability. 4. By employment of radium generally valuable time may be lost, although progressive processes only may suffer by procrastination. C. Z.

Treatment of Ocular Tuberculosis with Tuberculin.—**Koster** (*Tydschr. v. Geneesk.*, Jan. 7, 1906), in tuberculosis of the bulb, chiefly of cornea and uvea, uses local treatment with atropin and rest with general tonic treatment; if no result is reached hydrargyrum, preferably by inunction, is applied, and, if cure be not effected, then air insufflations into the anterior chamber are made. This last form of treatment sometimes gives very fine and generally satisfactory results in tuberculosis of the iris and cornea (see Annals of Ophth. vol. 11, 1902, pp. 554-556) but is sufficient when the chorioid or ciliary body are affected. Koster used tuberculin for these cases, as von Hippel had advocated. The third case had his right eye cured with V.: 5/lx, but relapsed later with signs of cyclitis and chorioiditis. The left eye inflamed October 12, a tuberculous keratitis and iritis, with signs of cyclitis was diagnosed; local treatment gave no result, vision, which was at first 9/x, diminished principally on account of opacities in the vitreous body, so that November 21 V. was 3/lx. Three days later tuberculin injections were begun exactly as v. Hippel prescribed. The patient often showed high temperature and felt very ill. The temperature was, however, always under 38° before the new injection. The rise of temperature usually came the day after the injection; at the time of the first injection of 4/500 mgr. the temperature reached 38.3°; it often rose to 39.5° and 40°. After the dose of 4/50 mgr. the temperature was 40.3°, after 14/50, 40.6°. The eye showed always local reaction in the times of little inflammation. Signs of reaction in the lungs or glands or other parts of the body could never be found. The effect was satisfactory as the opacities of the iris and vitreous body disappeared, while the patulous keratitis remained limited to the upper temporal portion. V. December 7 was 3/x; 5/x on December 17 and nearly 9/x on Jan. 23, 1905. Little relapses soon healed; the last irritation occurred March 2; all that time the injections were continued; the dose was 1 mgr. after February 2, and the injections were continued, although the patient was then under ambulatory treatment. Vision was 8/x, no more rise of temperature after injection; patient felt good and did not loose in weight or force.

A second patient, 25 years old, was favorably influenced with the air therapy for the left eye and somewhat for the right, but as symptoms of cyclitis remained for some months, tuberculin was tried. The effect was dubious; treatment during two months. Patient reacted as in the first case, but no change is visible; now and then redness and much pain of the bulb were present; the injections will be continued as they do not hurt the patient. Koster thinks that it is advisable to try tuberculin if the other remedies do not help, especially with tuberculosis of the chorioid and ciliary body. The serious reaction demonstrates that we must be very careful when large tuberculous foci exist elsewhere in the body. Koster was convinced that the high elevations of the temperature with such a small quantity of tuberculin could hardly be caused by tuberculosis of the eye alone. Still the second patient did not show any pain in other parts of the body.

Cuperus mentions a case treated by him in which he had to enucleate. After treatment the second eye became worse. E. E. B.

A Grave Form of Tuberculosis of the Eye Treated with Tuberculin T. R.—Hippel, V. (*Wiener Medizinische Presse,* Feb. 25, 1906). The author employed this mode of treatment in fourteen cases; in some of them 1/50 mm. was sufficient to produce a reaction of some duration; in these cases great caution is necessary at the increasing dosage. For diagnostic purposes 1 mm. of old tuberculin can be injected. In order to insure a lasting result the treatment with tuberculin must be kept up for a considerable length of time; the general condition improved in nearly all the cases; the swelling of the spleen and lymphatic glands disappeared and most of the patients increased in weight. Should the remedy not always lead to a complete cure, it is still worthy of trial, because it produces beneficial results in many respects. Bad effects on the general health were never observed in this method of treatmnt.

J. G.

Bier's "Congestion Hyperemia" Treatment in Eye Diseases.—Renner (*Wiener Medizinische Blätter,* Feb. 1, 1906). This treatment is applicable only to persons up to 40 years of age, in whom disease of the heart and circulatory system can be excluded. Cases where there is a deep-seated inflammation of the eye (iritis, iridocyclitis, iridochorioiditis acuta) must be excluded. The treatment was used in five cases of parenchymatous keratitis, in phlyctenular conjunctivitis and in ulcus corneæ. In each case the duration of the treatment was 6 to 12 hours from 2 to 4 weeks. In one case of parenchymatous keratitis after four weeks of treatment vision improved from 2/200 to 5/10. In none of the cases was any injurious effect of the treatment noticeable. J. G.

Analgesic and Anesthetic Procedures in Ophthalmology.—Fischer, M. (*Ungarische Medizinische Presse,* March 10, 1906). Among the local anesthetics cocain ranks first; its unpleasant toxic symptoms are well known; the mydriatic and drying effects on the cornea are some of the unpleasant symptoms of the drug. In the last few years a number of remedies were recommended as substitutes for cocain, such as eucain, acoin, holocain, stovain, etc., but none of these could show a decided superiority over cocain.

Lately alypin, a glycerin product, was recommended. One of its advantages over cocain is the fact that it does not decompose during sterilization. The drug is recommended to be used in 3 per cent. solution. Instilled into the eye it causes for about forty to sixty seconds a somewhat more severe burning than cocain, but after that the cornea becomes anesthetic, whereas the sensation of touch still persists; one drop suffices for anesthesia, which appears much sooner than with cocain. During the anesthesia the cornea becomes dry, but not to the extent that it does with cocain.

The drug also proved satisfactory in iridectomy; three to four drops are sufficient to anesthetize the iris. The hyperemia of the conjunctiva produced by the alypin may be counteracted by means of a drop of suprarenal extract.

A great advantage in the use of alypin is the fact that it does not cause dilatation of the pupil. J. G.

THE TREATMENT OF RECENT EMBOLISM OF THE RETINAL ARTERIES BY DIGITAL MASSAGE.—WÜRDEMANN, H. V., Milwaukee (*Amer. Journ. of Ophthal.,* January, 1906). The writer refers to his report of two cases of recent embolism of the central artery of the retina published in the *Annals of Ophthalmology* for October, 1901, in one of which all visual functions were restored to the normal and the other partly cured by deep digital massage. Since then he has treated three additional recent cases: the first without effect; in the second the result was V. 6/vi; in the third no effect.

He speaks of the prognosis and mentions the various forms of treatment which have been used for this affection and considers that forcible massage seems to give the best results.

Abstracts are given of all the cases which could be found that were treated with massage; they were, including the writer's five cases, fifteen in number; in eight of these there seemed to have been partial or complete recoveries of vision. Success with this form of treatment is ascribed mainly to massage, which permits a flow of blood past the obstruction and keeps up the retinal nutrition until sufficient absorption of the clot has taken place. The treatment is energetic, but is well borne and no damage has been done. Its application is as follows:

"After instillation of two drops of 5 per cent. cocain or 1 per cent. holocain solution, a little vaselin is put into the eye; the operator stands in front of the patient, who is in a sitting or lying position; one hand is placed back of the patient's neck to steady the head, and the thumb of the other pressed deeply between the eyeball and the wall of the orbit, the lids being closed, almost dislocating or gouging out the eye. Then with a slow, rotary motion the thumb is passed round the eyeball, the pressure being suddenly released and then repeated. This procedure is kept up for five to ten minutes, until the patient can stand the pressure no longer and calls for its stoppage. The treatment is made three times a day at first, then twice, and then once daily. The largest number of such treatments was given in my last case, being ten in six days. In three of the cases half a dozen office treatments were given by the electric vibrator once a day, after digital massage had been stopped. I have recently been using suction vibrator attached to the Pynchon pump on the Victor electric apparatus, for the purpose of increasing the blood supply to the optic nerve and retina in cases of atrophy, and believe such would be applicable to the treatment of embolism and thrombosis."

All these patients had hot compresses one-half hour on every third hour during the day for the first week, from four to eight pilocarpin sweats, and large doses of the iodid of potash for several weeks, medication by iodids being continued for a month or more in smaller dosage. After the third or fourth treatment the eyeballs become tender to touch and can not be so forcibly rubbed, but in no case has any inflammation been produced, nor has dislocation of the lens or retina followed. Even if such an accident should occur, the risk is well worth the taking, as these cases are otherwise hopeless.

C. H. M.

Hemolytic Injections for Recurrent Hemorrhages Into the Vitreous.—Elschnig, Vienna (translated from the German Edition, vol. li, March, 1905, by Dr. M. L. Foster, *Archives of Ophthalmology*, January, 1906). Following out the suggestions made by Roemer in 1903, that "an almost immediate disappearance of blood from the vitreous of rabbits' eyes could be brought about by the injection of serum obtained from guinea-pigs, hemolytic for rabbits' blood," Elschnig injected the serum in a case of hemorrhage into the vitreous, with detachment of the retina. The result was unfavorable. Increase of tension and plastic iridocyclitis followed and the eyeball was enucleated. Microscopic examination showed iridocyclitis, chorioiditis, necrosis of retina, a non-purulent, chronic, hyperplastic inflammation.

The author advises that the procedure be not abandoned, but suggests that the serum be used greatly diluted, one part to ten of normal salt solution, and that only a portion of the fluid drawn from the vitreous be replaced by the serum, in order to avoid the increase of tension. If the tension became increased, or an iridocyclitis appeared, the author would puncture the anterior chamber or the vitreous in order to accelerate the removal of the injected substance. W. R. M.

Blepharospasm Treated by Deep Injections of Alcohol in the Region of Emergence of Facial Nerve.—Valude (*Annales d'Oculistique,* December, 1905). Pitres and Verger have introduced the injections of alcohol in facial neuralgia and Schloesser has proclaimed its good effects in convulsive tic and rebellious blepharospasm. The latter writes: "The needle of a Pravaz syringe, filled with rectified alcohol, is inserted at a point between the anterior face of the mastoid process and the lower surface of the cartilaginous meatus, directed a little forward and pushed to a depth of 2 cm. It impinges against the styloid process and is then directed a little backward along the temporal bone and falls upon the stylomastoid foramen. Twenty centigrams of alcohol are first injected, and then a series of injections of 10 cg. each, separated by short intervals, is made until the whole syringeful is injected. The immediate effect is paralysis of the facial, which gradually disappears, and is followed by disappearance of the convulsive state."

Valude reports two cases in which this treatment was tried. Almost immediately there was complete paralysis of the facial. In two hours the eye could be closed, but there was still some embarrassment of speech. The next day the paralysis had almost, if not entirely, disappeared. Twelve days later there had been no reappearance of the spasm. G. C. H.

Unilateral Facial Spasm Cured by Deep Injection of Alcohol.—Abadie and Dupuy, Dutemps (*Archives d'Ophtalmologie,* February, 1906), report a case treated by the method introduced by Shloesser of deep injection of alcohol.

A dressmaker, 56 years of age, had been affected for sixteen years with an intense facial spasm of the left side. It had commenced, without discoverable cause, with occasional and intermittent contraction of the orbicularis, and had gradually extended to all the muscles of the face, becoming more and more frequent and intense, sometimes arousing the patient from sleep, increasing when she talked or applied herself to work, and for the last five years compelling her to abandon her trade. Various kinds of treatment had been tried without result, and the patient had given up all hope of relief, and when a traumatism nearly destroyed the sight of the other eye she was practically blind.

The spasm ceased entirely after an injection of alcohol in the region of the trunk of the facial at its exit from the stylomastoid foramen, and had not recurred two months and a half later.

The technic of the operation, as indicated by Shloesser, is as follows: The external ear is drawn upward and forward, the needle of a Pravaz syringe is inserted at the summit of the angle formed by the anterior border of the mastoid process and the cartilage of the meatus and pushed perpendicularly and slightly forward to a depth of 2 cm., when it impinges against the styloid process. The point is then directed a little backward and falls upon the facial nerve at its exit from the foramen, and a cubic centimeter of alcohol at 80° C. is injected. The pain may be diminished by the addition of cocain or stovain. Immediately after the operation there was severe but transient pain, and in a few minutes there was complete facial paralysis. This paralysis commenced to diminish in a quarter of an hour, but did not disappear for some days. At the end of twenty days there was scarcely a trace of paralysis or spasm. Later there was still further improvement and the patient resumed her work. G. C. H.

MEDICOLEGAL.

Medicolegal Aspects of Traumatic Corneal Ulcers.—Bell, James H., San Antonio (*Texas State Journ. of Med.,* April, 1906). This affection is common in railway surgery. No one hesitates to attempt to remove a foreign body from the eye. Every member of a train crew, from the conductor to the porter, has in hand for this emergency a cotton dip, soiled handkerchief, match or discarded toothpick. The consequences of these friendly but unskilled efforts are often provocative of trouble, physically for the patient and financially for the road. The patient, in losing an eye, may gain a competency. A small corneal scar has served more than once to lift a fireman from the cab of his engine into a position of easy affluence. No attempt should be made to remove a foreign body from the cornea while the train is in motion or at any time or place by a person not qualified for the responsibility thus assumed. A protective bandage over the closed lids will suffice till the nearest physician is reached. Aside from the dangers of infection, unskilled efforts usually result in an opaque scar (more often in an infected ulcer.—P. H. F.). As long as this indiscriminate practice is permitted by the executives of the road the company is legally and financially bound by the results. Moreover, the medical staff is forced to act as consultant authority to the layman and has immediately to bear the burden of his mistakes. No traumatic involvement of the cornea is a trivial matter in railway surgery. The ophthalmic surgeon should have full authority to commit a patient to the hospital in the exercise of his judgment. These precautions and attention to apparently trivial details of treatment would curtail in a marked degree the number and success of personal-injury suits against railroads. P. H. F.

MISCELLANEOUS.

Eyesight, Literature and Civilization.—Heath, F. C., Indianapolis (*Ind. Med. Journ.,* February, 1905), reviews the evidence presented by Gould in his "Biographic Clinics" and thinks it a matter of regret that so many practitioners still ignore eyestrain as a cause of headache. When the symptoms are remote from the eye this oversight is explainable, yet every oculist knows that digestive disturbances are frequent in his cases. Patients often remark on being tested that certain glasses make them feel sick at the stomach. Insomnia is not a frequent symptom, yet it is at times cured by correction of ametropia. The rôle of eyestrain in neurasthenia is difficult to determine. It may be the cause or the effect. In migraine the digestive tract is at least as important a factor as ametropia. Heredity, menstrual anomalies, the climacteric, rheumatism, influenza, constipation are occasional causes. With reference to chorea, epilepsy and insanity, H. has still to see any cases in which eyestrain seemed to be anything more than an aggravating factor. The amount of work done by Darwin, Spencer and others was curtailed by asthenopia. George Eliot and Carlyle might have been optimists had they been able to work without suffering. Many otherwise well adapted to certain useful occupations have given them up for others requiring less strain of their eyes. School boys have been idle because they have not been able to study without headache. "And how often the terrible sufferings of eyestrain may have ended in suicide." P. H. F.

The Care of the Eyes of School Children.—Bishop, S. S., Harrisburg, Pa. (*Ophthalmic Record,* March, 1906). The eye is likened to a camera in living tissue and is spoken of in such a manner that any layman can easily understand its mechanism. The eye should be examined by the oculist and not by the modern optician with his many high-sounding titles. It is as absurd to attempt to adjust an error of refraction while the ciliary muscle is active as to attempt to repair a watch while it is running. The condition physically of the patient should always be taken into consideration. No matter how young the child, if his eyes need the assistance glasses can give he should have it. The Chinese perform capital punishment by causing water to drop, drop by drop, upon the head of the victim. In three days he is insane and by the end of a week he is dead. This illustrates how the brain and nervous system can be irritated and disease produced by constantly nagging at so delicately constructed an organism as the eye. Vertigo, nausea, dyspepsia, chorea, insomnia, epilepsy, hysteria, nervous prostration, insanity and general failure of health may be caused by eyestrain. Statistics show a marked and steady increase in nervousness in children after beginning school life, also that the correction of eye defects, when done early, arrests this tendency. The teacher's duty to the child should be to watch closely for any abnormal symptoms or complaints, and when it is possible that the eyes may be the cause to suggest to the parents that they have an oculist examine the child's eyes. M. B.

MUSCLES.

Unilateral and Other Unusual Forms of Nystagmus.—Duane, Alexander, New York (*New York State Journal of Medicine,* July, 1905). As a rule nystagmus is remarkably symmetrical. the movements being simultaneous, parallel and equal in the two eyes. The following forms are rare exceptions: *Disjunctive Nystagmus.*—The two eyes move not in parallel direction, but alternately toward and away from each other, the movements being symmetrical and equal in the two eyes. *Dissociated nystagmus.*—The movements are unsymmetrical and unrelated, one moving faster and further than the other or moving in a totally different way. *Unilateral nystagmus.*—This is a form of the second variety into which, in fact, it often passes. Still another variety is *circumduction nystagmus,* which is extremely rare. It occurs in miners' nystagmus and spasmus nutans. It consists in the center of each cornea moving rapidly around in a circular or elliptical path. This is different from rotary nystagmus, in which the cornea rotates about its center. In one form of disjunctive nystagmus the eyeballs alternately and rhythmically converge and diverge. This occurs in spasmus nutans; it may, too, develop in adults on account of excessive eyestrain. The other possible form of this variety is a convergent or divergent rotary nystagmus. Duane reports a case of this

Circumduction nystagmus may also be disjunctive, as in a case of miner's nystagmus reported by Graefe, in which the two eyes traveled in elliptical paths, but in opposite directions.

In dissociated nystagmus the difference is usually one of rhythm and extent and this is most commonly met with in those cases of unilateral nystagmus which have become bilateral temporarily, as frequently happens. Occasionally the difference is one of direction, horizontal in one eye and vertical or rotary in the other. This form, too, is seen in unilateral nystagmus which has become bilateral, and occurs, too, in spasmus nutans.

Cases of unilateral nystagmus are usually, in fact, bilateral, the movements in one eye being so minute as to escape observation, or being absent only part of the time. In these cases the movement is usually vertical, but it may be horizontal or rotary. Unilateral forms seem to be associated with apparent movement of objects and in the acquired form it may be very distressing. Unilateral nystagmus occurs as an infantile affection in spasmus nutans and unilateral opacity of the media. In later life it is seen in unilateral amblyopia and squint, unilateral opacity of the media, unilateral astigmatism and nervous disease, especially multiple sclerosis. In a large proportion of the unilateral cases there is squint, and in others there is evident anomaly of some of the ocular muscles. It is probable that these cases differ in no essential way from bilateral nystagmus, but represent a form of the latter modified by special conditions. Both varieties are alike due to perverted action of the centers governing the co-ordinated eye movements, and the primary causes producing this perverted action are the same in both. These causes are centripetal, i. e., opacities of the media, high astigmatism, albinism, etc., producing blurred vision, particularly in infants (optical nystagmus); centrifugal, i. e., some brain disease affecting the co-ordinating centers or the tracts connected with them. In unilateral nystagmus, either the conditions are such that these primary causes (brain disease or defective sight) act predominantly on one eye or else there is a contributing cause—a muscular anomaly—which being mainly confined to one eye makes that eye respond more readily to the abnormal stimuli set up by the primary cause. These considerations have a bearing on prognosis and treatment, and in general the unilateral variety appears to have a better prognosis and is more amenable to treatment than the bilateral form. E. E. J.

VOCATIONAL NYSTAGMUS.—BLOK (*Tydschr. v. Geneesk.* Feb. 24, 1906), saw a mail clerk with compound myopic astigmatism, 20 years old, who complained that on the foregoing day all objects began to dance up and down when he looked at them, so that he could not work, neither could he walk well on account of dizziness. He uses sph. —1.00 ⌒ 0.50, 180°. Patient is anemic, delicate, has a decided vertical nystagmus, some 10 times a second not changing with fixation, neither when he looks up, down, out or inward and goes about with closed eyelids. The orbicularis palpebrarum on both sides shows contractions of somewhat the same frequency, but not of the same amplitudes. No other changes. Vision undeterminable on account of the apparent motions of the letters. Pulse, 110 per minute and somewhat weak. Knee reflex normal. No epilepsy, nor in the family. By exclusion Blok considers it to be a vocational nystagmus. The pulse acceleration, the only other abnormality besides the anemia, could be accounted for as a consequence of patient's fear that he would become incapable of working. Everything is in favor of a nystagmus, through overexertion under bad illumination with weak nervous system. Rest, bromkali and iron in two days lessened the amplitude of the nystagmus, it became less while looking up, down, out and inward, and the spasm of the orbicularis disappeared. On the fifth day it was only present while gazing in the distance and had totally disappeared on the seventh day. On the fourth day vision was normal after correction. After ten days patient resumed his work.

Discussion.—Blok responded to deVries and Nicolai that hysteric symptoms were absent. Lans and Wagtho saw cases of unilateral nystagmus which they consider to be hysterical.

Straub considers that hysteria and vocational neurosis are connected, but believes that the present case speaks more for hysteria than for vocational neurosis on account of the rapid cure.

E. E. B.

TREATMENT OF CONVERGENT SQUINT IN YOUNG CHILDREN.—EMERSON, LINN, Orange, N. J. (*Annals of Ophthalmology*, October, 1905). This paper is an appeal to the general practitioner for the early recognition of squint, and that he urge the parents to have the child's eyes attended to at once. He thinks the refraction and orthopedic training should begin, if possible, between the ages of 2 and 3 years. He points out that delay is dangerous to the vision of the squinting eye. He finds it a good plan to give full correction in the fixing eye and one-half dioptry less than full correction in the squinting eye. He believes in the use of atropin in the fixing eye, and if necessary the occlusion pad as well as in fusion training.

He is a believer in amblyopia ex anopsia. When the squint is alternating he uses atropin in both eyes constantly, adding + 3.00 S. plasters to the distance correction, which removes the desire to accommodate as well as to squint. He is not averse to operation if these measures fail. The operation to be selected depends somewhat on the degree and nature of the squint. Advancement operations he considers safer than tenotomies. M. B.

THE PRESENT TREATMENT OF SQUINT.—POSEY, W. C., Philadelphia (*Penn. Med. Journ.*, April, 1906). All children, by reason of their hyperopia, are more or less disposed to squint. Spasm of accommodation and adduction, especially with inequality of vision, may cause a deviation. Vicious optical conditions are the primary cause of squint, and fright, teething or general bodily weakness have only a very vague and subordinate influence. Vision in the deviating eye rapidly deteriorates by suppression of the image to avoid diplopia. Treatment consists in the improvement of the vision in the defective eye, the neutralization of hypermetropia and lessening of accommodative effort and, finally, in the strengthening of the nervous and muscular mechanism which controls the movements of the eyes and the cultivation of the desire for binocular vision. Vision in squinting eyes can not be improved in subjects over 6 years of age (? P. H. F.). Squint usually appears first at about the age of 2, and improvement of vision of the deviating eye should be attempted at once. The use of this eye is encouraged by blurring the vision of the other with atropin. This is the best method until the child is old enough to permit of the use of other measures. Barring the non-squinting eye for several hours each day and having the child look at pictures or toys with the other is also of value. It is a mistake to atropinize both eyes. When the child is 2 or 3 years old, glasses may be prescribed. They should be mounted in stout frames, may be fastened by tapes, and must not press on the base of the nose. The degree of refraction error in the young can be determined accurately and speedily by retinoscopy, no matter how restless and impatient the subject. When the child is a year or so older, exercises with the amblyoscope are of great value. When the eye remains crossed in spite of normal vision and good fusion faculty, tenotomy or advancement of one or of both interni will have to be performed. Amblyoscopic exercises should be continued for a year or more after operation, which is best performed at about the sixth year. P. H. F.

MYOPIA.

Hereditary Influences of Myopia.—Worth, Claud. London (*Medical Press,* March 14, 1906). Though often regarded as a simple error of refraction, grave complications may arise which altogether overshadow the original condition. Myopia is frequently inherited. In a series of 687 cases examined by the author, 33 were malignant and 654 were uncomplicated. Of the latter 56 per cent. gave a family history of myopia, while of the former in only 24.25 per cent. was evidence of heredity found. In one family, whose pedigree was shown, nearly all the males were myopic and none of the females; but the myopia was transmitted through the female line. The amount was in all cases examined about the same —viz., 10 to 12 D. with some astigmatism. The fundi showed crescents, but grave complications were wanting. Curiously enough in this family all the healthy eyes were blue, and all the myopic ones were brown. Night blindness was only admitted in one family. The statistics of the 687 cases were as follows: Of 313 with no family history of myopia, 163 were males and 150 females. Of 374 with a family history of myopia, 228 were males and 146 females. This showed the usual preponderance of myopia in men was increased in those in which myopia was hereditary. Of the 374 cases in which a family history of myopia was obtained, in 159 the parents were myopic, but the myopia was present in uncle, aunt or grandparent. The fault was on the mother's side in 104 cases, on the father's side in 33 cases, and on both sides in 32 cases.

C. H. M.

On Lasting Results of the Operative Treatment of High Myopia.—Pause, G., Chemnitz (From the eye clinic of Prof. A. Siegrist in the University of Bern. *Zeitschrift fuer Aug.,* 1906, xv, p. 115). This is a continuation of the monograph of the late Prof. E. Pflueger: "Suppression du cristallin transparent, Paris, 1899," in which he published 100 myopia operations. Pause speaks of a lasting result, if from the last operation 5 years have elapsed without damage to the eye, as affections occurring after that period can not very well be charged to the operation. He reports the returns on 24 (all he could obtain out of 42 eyes) operated on till 1894, inclusive. The time of observation from the last operation was from 6 to 11 years, in most 10 years. Not one detachment of the retina occurred, only one eye out of the 24 lost its central vision, the results in all others were excellent. Pause recommends Pflueger's method to estimate high progressive myopia in which the question of operative treatment may be considered, according to age, degree, corneal refraction, vision and development of myopia. A certain minimal limit of myopia is postulated.

For the calculation of refraction after aphakia, the exact determination of the corneal refraction, besides that of total refraction, is compulsory. In a corneal refraction of 40.00 D., e. g., a total myopia of 20.00 is necessary to expect emmetropia after the operation, while in a corneal refraction of 49.00 a total myopia of 16.00 to 17.00 is sufficient. The visual acuity of the eyes operated on increased 2 to 4 times, in one case 5 times. The average vision before operation was 0.289, many years after operation in 1904, 0.72. For the explanation of this increase an improvement of the function of the retina must be surmised. The results are the better, the earlier the operation is performed. Central, recent and old, chorioiditic changes are no contraindication. On the contrary, in critically selected cases, we may be able to preserve central vision in a large percentage of such eyes. Pause's observations demonstrate that by extraction of the lens from the highly myopic eye the elongation of the axis of the globe is not checked, but only retarded. The superiority of primary linear extraction over Fukala's method has so far not been convincingly proven. C. Z.

RESULTS OF THE REMOVAL OF THE TRANSPARENT CRYSTALLINE LENS IN HIGH MYOPIA.—DE FONT. Reaulx (*Annales d'Oculistique*, February, 1906). The author reviews the results in reported cases and the opinions of various authors in an attempt to determine the advantages and disadvantages of the operation. Of 1,620 cases, 140 patients have been operated on by extraction, and the rest by discission followed by evacuation, which has many more advocates. Aside from complications and accidents, the immediate results of the operation are considered in reference to the refraction and the visual acuity. The first operators expected to find a diminution of myopia of 10 D., which is about the refractive power of the lens. But the anterio-posterior axis of the eye being longer in the myopic, the lens is farther from the retina, and while an elongation of 1 mm. in the complete eye increases the refraction by 3 D. the same elongation in the aphakial eye gives an increase of only half that amount. The removal of the lens, therefore, in a myopic eye diminishes the refraction by 10 D., which represented the lens, and by half of the axial myopia. According to this calculation, a myope of —20 D. would become emmetropic, and one of —10 D. would require a +5. And this, with a considerable margin for errors, is about the result generally obtained. Errors result from the difficulty of determining the refraction accurately in high myopia. The author agrees with Kalt that in less than —13 D. nothing is to be gained by operation.

The visual acuity is generally decidedly improved by operation, though this is not always the case. Of the 1,620 cases it was improved in 1,492, diminished in 73, and unchanged in 55. One patient out of 12 was not benefited by the operation. In many observations it has been noted that while the operated eye saw farther and saw better it was less useful for near work, and the unoperated eye continued to be preferred for close occupations. The kind of work that a patient is engaged in is, therefore, an important consideration in deciding on an operation.

The practical results are better when the patients remain slightly myopic or become emmetropic after the operation than when they are hypermetropic.

According to a number of authors, the anteroposterior axis nearly always ceases to elongate under the influence of surgical treatment and is often diminished slightly in children and young people, but such diminution is exceptional in adults. But the author agrees with Sulzer and Bacher that in a large proportion of patients operated on at the time of life when myopia is progressive the elongation of the globe continues after the extraction of the lens. In making comparisons it must be remembered that an increase in the axis of 1 mm. in an aphakial eye causes only 1.50 D. increase of myopia, while in the complete eye the increase of myopia is 3 D.

In general the rapid increase of myopia has been lessened in both eyes by operation on one in consequence of the improvement in the position of the head and the suppression of accommodation and convergence. But, on the other hand, the continuation, even in a slight degree, of the elongation of the axis, shows that there must be another cause—a tendency of the eye to increase its axis, to yield more readily than another to the pressure of the muscles on the less resistant envelopes of the ball. Myopic chorioiditis is a disease independent of the presence or absence of the lens. Lesions of the deep membranes of the eye are not the result of the error of refraction and do not disappear with it. The myopia increases because the eye is diseased, the eye does not become diseased because the myopia increases, and it is in a more precise knowledge of the pathogeny that the means of relief of these two conditions of progressive myopia are to be found.

The absence of the lens does not promote separation of the retina or other deep lesions, while it does not prevent them; but the shock and the various complications and accidents of the repeated operations, particularly loss of vitreous, may not be without influence, and the operation probably somewhat increases the chance of separation.

As to the danger of glaucoma, while the iridectomy is preventive, the presence of swollen cortical and the iris synechia tend to promote it and must be reckoned among the risks of the operation.

The author concludes that removal of the lens in high myopia is a very serious operation that should not be lightly undertaken and that too much should not be expected of it. The occupation of the patient is an important consideration, as the benefit to be derived from the operation, particularly in myopia of less than —20, is problematical. Eyes of less than —20 D. should not be operated on except in young patients in whom the myopia is likely to increase. The result is better when the eye remains slightly myopic than when it becomes hypermetropic. High anisometropia and strabismus are conditions favorable to operation. Unfavorable conditions are inflammation of the lacrimal passages or lids, tendency to separation of the retina, an occupation requiring close work or binocular vision and a relatively low myopia in subjects more than 25 years of age. As for lesions of the chorioid and retina they need not be considered either pro or con. The eye operated on should be that with least accurate near vision. If the patient has only one useful eye, the risk of operation should not be taken. It is to the interest of the surgeon to advise the patient of the risks that he is taking. G. C. H.

NERVOUS SYSTEM AND VISUAL ORGANS.

Developmental Alexia (Congenital Word Blindness).—Jackson, Edward, Denver, Colo. (*Amer. Journ. of Med. Sciences*, May, 1906). The term "developmental alexia" is suggested by the writer as a proper one for inability or great difficulty in learning to read, a condition which Hinshelwood termed "congenital word blindness." The latter term seems inappropriate for a condition that exists with normal visual acuteness and normal fields of vision. Indeed, Hinshelwood maintains "that the diagnosis of congenital word blindness can only be made with confidence when we are dealing with a child with healthy eyes and good visual acuity." The word alexia, inability to read, carries no implication of imperfect vision, and seems, therefore, more appropriate. The condition is essentially a failure of development, or a delayed development of a group of co-ordinations, or a co-ordinating center essential to the recognition of written or printed characters.

Brief abstracts of the 17 cases hitherto reported and short histories of two additional examples seen by the writer are given. It is pointed out that, although the condition is not one of impaired vision, every case has sought relief for a supposed visual defect. The peculiarity is probably not rare, but has passed unnoticed. It occurs much more frequently in boys than in girls. In every case the vision has been normal and the eyes healthy; where errors of refraction have been reported they have been hyperopia, sometimes with astigmatism of low degree; it is possible that the error of refraction may have added a difficulty since it is well known that hyperopia predisposes to poor scholarship in general; but this influence must be of minor importance.

Clearly, we have to deal with a specific defect of brain development. This has been commonly spoken of as a defective memory for the visual impression of letters and words—the absence of a center for word memory. It is very likely that this is the best explanation for some cases. Notably those that are unable to learn to recognize by sight the different letters of the alphabet. But in other cases it is probable that the defect is of somewhat different character. Spoken language is generally pretty well acquired before the effort to understand and employ its written symbols is commenced. Any lack of co-ordination between visual centers and those already developed to serve the faculties of hearing and speech would cause alexia, even though the geometric form of the letters could be recognized and remembered with out especial difficulty. The co-ordinations required for the comprehension and use of language are extremely complex, and the failure of these to connect with the visual impressions at any point would be a sufficient explanation of these cases.

It is true that developmental alexia may arise from more than one kind of defect, different methods of meeting it will be appropriate to different cases. When the deficiency is one of memory for the forms of letters the best plan of detection and improvement is teaching children their letters as early as possible, supplemented by such exercises as reproducing the forms of letters with the pencil. Where, however, it is failure to co-ordinate the written or printed symbols with the sounds and ideas that they are intended to stand for, such exercises as the reading aloud, or following with the printed book the reading of another person, or writing from dictation, will be of most value. This study must be pursued outside of classes by means of special instruction. With proper treatment the prospect of removing this difficulty is usually very good.

In many cases it is probably only a question of delayed development, so that normal facility would be reached later without special training. But we have to recognize that the defect may be permanent, and the best that can be done for the patient will be to cease efforts to learn to read when these can properly be regarded as hopeless, and to turn the attention to training by the ear; and in other ways, to supplement the necessarily defective powers of the individual.

C. H. M.

HERPES ZOSTER OPHTHALMICUS.—STIEREN, EDWARD, Pittsburg, Pa. (*Pennsylvania Medical Journal,* February, 1906. See also *Ophthalmic Record,* February, 1906). Stieren gives his observations on six cases of ophthalmic zoster. In four the attacks were ordinary, all having pitting of the forehead and insignificant ocular complications; one of these, too, had a partial ophthalmoplegia which subsided with the eruption. The other two cases illustrate the wide disparity that may exist in these cases. Both these came on after overheating and a chilling. In the maximum case there was a chill and neuralgic pain over o. s., followed by an eruption of the skin on left side of forehead and nose. There was much sensitiveness to light and ptosis. The ocular conjunctiva much conjested, the palpebral conjunctiva red and rough, with yellow deposits on both lids. The cornea had a dirty yellow transudate in its substance, cornea insensitive. The eye had subsequently to be enucleated. The other case also followed a chilling. There were the usual vesicles but no rise of temperature or any constitutional symptoms. There was one bleb at the limbus which soon got well.

It is the consensus of opinion that this disease is similar in its nature to acute poliomyelitis. There is acute inflammation in the intervertebral ganglia with minute extravasations of blood, destruction of ganglion cells and nerve fibers and inflammation of connective tissue. These have repeatedly been found. The posterior roots usually show inflammation and the fibers of the peripheral nerves are found to be degenerated. In herpes zoster ophthalmicus the Gasserian ganglion is found to be similarly affected. Some have found a diplobacillus. Stieren does not believe that the cause of this disease is in obscure atmospheric conditions or that there is an acute specific cause. In all his cases there has been a history of exposure to cold or dampness after unusual exertion, with consequent fatigue, in individuals of otherwise sedentary habits.

E. E. J.

OPERATIONS.

A New Method of Operating in Pannus.—Primrose, William, Glasgow. (*The Lancet,* April 21, 1906). The writer describes a very simple operation which he has found satisfactory: it consists in causing an extravasation of blood into the subconjunctival tissue around the cornea, which by mechanical pressure and irritation sets up localized inflammation and thus causes obliteration of the vessels which vascularize the cornea. The point of a small sharp-pointed knife is passed through the conjunctiva 2 or 3 mm. from the cornea, made to puncture one of the large blood vessels, and then withdrawn. The conjunctival wound should be as small as possible and oblique; in this way there is no external hemorrhage; the subconjunctival bleeding is arrested by pressure of the extravasated blood upon the vessel walls and thus many of the smaller vessels are closed; this mechanical action is increased by the formation of a coagulum, the fibrinous part of which shrinks.

"Extravasated blood acts as an irritant, probably chemical as well as mechanical, so a non-infective inflammation is set up which results in the absorption of the blood clot. This process acts as a counter irritation to the inflammation of the corneal tissues and so tends to remove the seat of inflammation and the supply of blood from the diseased cornea to the clot, where the effects of the inflammation are comparatively trivial. By the time the blood clot has disappeared the blood vessels in the cornea affected by the operation have shrivelled up and the cornea has regained much of its transparency. The whole pannus may be treated in this way at one time or the operation may be repeated from time to time, only a part of the pannus being treated each time. The latter is always advisable when the pannus is marked, as the inflammatory reaction is sometimes very severe and accompanied by a good deal of pain. Although the structures in the anterior part of the eyeball are all more or less affected by the inflammation this is easily controlled and subsides in a few days with the application of suitable remedies."

C. H. M.

Tarsorrhaphy for Lagophthalmus in Morbus Basedowii.—Faber, E. (*Tydschr. v. Geneesk.* Feb. 17, 1906), shows a 66-year old lady, whom he saw for the first time in 1902, complaining of nearsightedness and protrusion. Myopia of 20 D. was present with a decided protrusion of the bulb and v. Graefe's symptom; the pulse rate was 100, struma absent, patient was very nervous. Faber made the diagnosis of Morbus Basedowii Forme Fruste, being verified by the course; protrusion and pulse rate increased and a struma was present three months later. It became difficult to close the eyes at night, therefore the patient was instructed to bandage the eyes during the night. On March 18, 1903, Faber was called, as the patient had been unable to close her eyes for twenty-four hours; the eyelids were closed with some sutures. Rest and good food improved the general condition, lavage of the conjunctival sac behind the closed eyelids, etc., cleared the cornea, so that five weeks later a tarsorrhaphy could be made. The general symptoms disappeared, so that now pulse rate is normal and struma has vanished. First three horizontal sutures were made on each eyelid near the margin, each taking in 3 to 4 mm. of skin, those of the upper lids were attached to the cheek with plaster strips and of the under eyelids to the front. As the threads loosened they were tied to one another. This was only a temporary success, as the sutures cut through. Faber therefore put the suture through the entire thickness of the lids, over tarsus of the upper lid and at the inner side of the under eyelid under the tarsus and perforating the lid, tying these closed the eye; at each side three sutures were placed; they did not cut through and were satisfactory. In performing tarsorrhaphy the upper and under eyelids were slit for a length of 1.5 cm., and these wound surfaces of both lids were sutured together, as is done with the perineoplasty of Lawson Tait. Perfect coaptation resulted, being helped by temporary sutures.

E. E. B.

THE GALVANO CAUTERY IN THE CORRECTION OF ENTROPION.—TORNATOLA, S., Messina. (*Annalli di Ottalmologia,* No. 11-12, 1905). For many years the writer has made the first part of the operation with the galvano cautery destroying as much of the soft tissue of the lid and tarsus (a cuneiform piece) as is removed with the bistoury in the process of Streatfield. Union of the soft parts follows after removal of the eschar and the tarsus with correction of the curvature of the lid. It is rare that one has to insert sutures to bring together the lips. The operation is performed with great rapidity, provokes little pain, is followed by cure and leaves no deformity.

R. H. J.

THE GOOD EFFECTS OF TARSORRHAPHY IN CERTAIN TRAUMATISMS OF THE GLOBE.—MONTHUS. (*Archives d'Ophtalmologie,* January, 1906), reports some cases in which tarsorrhaphy was resorted to with advantage in the treatment of corneal, scleral and corneoscleral wounds.

G. C. H.

On Widening of the Palpebral Fissure with Utilization of Cutis.—Kuhnt, Hermann, Koenigsberg, i. P. (*Zeitschrift fuer Aug.,* 1906, xv, p. 238). In chronic infiltrations of the conjunctiva and in shrunken conjunctival sacs von Ammon's canthoplasty does not prove efficient, on account of the lack of elasticity of the conjunctiva, which prevents a sufficient covering of the wound, or the fixating sutures cut through too early. K. covers the wound with Thiersch's flaps taken from the inner side of the upper arm. The flap must be large enough not only to cover the incision, but also to be inserted 3 to 4 mm. under the undermined edges of the skin and conjunctiva. A further modification in cases of incipient inversion or entropion of the borders of the lids is described in detail and must be read in the original.

C. Z.

Plastic Operation on the Eyelids by Means of Skin Flaps Taken from the Neck.—Snydacker, E. F., Chicago. (*Archives of Ophthalmology,* January, 1906), describes a plastic operation for relief of a marked cicatricial ectropion of both upper and lower lids, resulting from a burn, and which had previously been unsuccessfully operated by the transplantation of Thiersch grafts.

S. made incisions parallel to the borders of both lids, dissected adhesions, and put lids on the stretch by suturing the upper and lower lids together. A large skin flap was then cut from below the angle of the lower jaw to the clavicle, the pedicle of the flap being at the angle of the jaw, and the lower end of this flap was split upwards 4 cm., the flap turned on its pedicle, and one end of the split flap sutured on the denuded area of the upper lid and the other split and over the lower lid. A bridge of flap was thus left extending from the outer edge of the eyelids to the pedicle of the main flap at the angle of the jaw.

The bridge of skin passing over the cheek was allowed to remain for six days and then cut off. The wound in the neck was covered by undermining the edges, bringing them together and suturing.

The author reports a satisfactory result. W. R. M.

Total Ectropion of the Lower Lid Cured by Vertical Cauterization of the Palpebral Conjunctiva.—Jocqs. (*La Clinique Ophtalmologique,* March 25, 1906). The author presented the case upon which his paper is based before the Paris Ophthalmological Society. The patient was 63 years old, had an enormous ectropion of left lower lid, and Jocqs operated February 15 by vertical cauterizations, which procedure he had described at the French Ophthalmological Society in 1896. Fifteen days after the operation the lid had completely recovered its normal position. Jocqs divides ectropions according to their degree into three classes: (1) Slight eversion of the free lid border, leaving between the globe and lid an angle of about 45°, always filled with tears. (2) Eversion more pronounced, about 90°, that is to say the lid is nearly horizontal. (3) Complete ectropion, the lid being nearly vertical. In the last class the conjunctiva is thick, exposed to the air, and forms an enormous cushion; it is an ectropion of this last degree which Jocqs had in the case reported. Since 1896 he has operated on a number of well pronounced cases and has obtained good results, but the cure was not so quick as in that of the case now recorded. The difference, the author believes, was because that immediately after the cauterization he had made a median blepharorrhaphy of 3 or 4 mm. and allowed the suture to remain in place for fifteen days, necessary for cicatrization, thus avoiding a dressing which would press on the cauterized mucous membrane, and of combatting by the suture the traction exercised upon the lid by the cutaneous thickness, and of preventing the irritation of a lacrimal overflow. The vertical cauterizations have the advantage over other operations of being one simple operation certain in its results. Jocqs states that the cauterizations should be commenced at the fundus of the cul-de-sac, but without encroaching upon the bulbar mucosa; in order to avoid this it is necessary to draw strongly upon the lid when holding the latter at the time of applying the cautery. The cauterization ought to be deep enough but not too wide, using only a narrow cautery tip. Jocqs has been able to watch the results in twenty cases operated by cauterization for five years and the resulting cure was permanent. B. E. F.

THE SURGICAL TREATMENT OF PTOSIS.—THOMPSON, J. J., New York. (*Annals of Ophthalmology,* October, 1905). The author's operation is a modification in technic of the operation of Wolfe. An incision is made through the skin parallel to and extending the full length of the upper tarsal margin. The skin is then dissected from the underlying parts, downward to the lid margin and upward to the brow. Vertical incisions are made through the orbicularis on either side of the levator, and this strip of orbicularis removed. The levator is now separated from the conjunctiva as far back as possible. The tendon is now grasped and severed from its tarsal attachment. From 1½ to 3 mm. of it excised, and then reattached by mattress sutures to the tarsus near its ciliary margin. Silk is used for the suturing. The skin wound is closed after a small strip of skin is removed and the part covered with a dry dressing. The author claims that this operation works well even in the presence of an atrophic muscle, and that it is especially indicated in monocular ptosis. Some of his cases are two years old and no recurrence of the ptosis has taken place. M. B.

Ablation of the Lacrimal Sac, Its Advantages and Its Indications.—Gendron, Lorient (*L'Ophtalmologie Provinciale*, December and February, 1905-6). This article comprises sixteen columns of eminently practical matter, and tends to more than justify the growing popularity of the operation in question. At the beginning the writer gives a brief historical sketch of the surgery of the lacrimal sac leading up to the operation of ablation, and of the indications as conceived by the authors of the different measures. Gendron is of those who would extend yet further the indications. He has, during the past three years, made extirpation of the sac in 35 instances. Seven were cases of lacrimal tumor, or old dacriocystitis with alterations of the sac walls and ectasia; 5 were of blennorrhea that had been persistently, but vainly treated; 9 were cases of chronic infectious disease of the lacrimal canal in patients that could not submit to prolonged conservative treatment; 10 were grave ulcerations of the cornea in connection with lacrimal blennorrhea; and 4 were of purulent dacryocystitis in patients with cataract, where ablation was made a preliminary to extraction. Before describing the operation the author first gives a few general considerations. For example, he says that one word sums up the whole of the technic, treat the lacrimal sac as if it were a subcutaneous cyst, and in like manner extirpate it. Formerly he employed chloroform narcosis, but his last 15 ablations were made with local anesthesia, which he deems sufficient for the vast majority of cases. He uses a solution composed of 11 centigr. of cocain, 1 c.c. of adrenalin, and 10 c.c. of sterile water. This is both instilled into the conjunctival sac and injected into and beneath the skin about the lacrimal sac. Gendron makes the one-inch long, cutaneous incision, curving outward over the infero-nasal rim of the orbit, that has become the standard, except that he begins it one-half cm. higher, including the internal canthal ligament. Nothing is said about reuniting the fragments of this ligament with catgut before closing the skin incision, and the inference is that it is left divided. For holding open the wound the handled retractors of Volkmann, or simple squint hooks, are preferred to instruments made on the principles of a blephorastat, such as Müller's. The nasal portion of the lacrimal canal is cauterized.

and the external wound is sutured for primary union, i. e., no drain is put in. After describing the technic a number of modifications of the various steps, together with their originators, are mentioned. Among the surgeons named are Axenfeld, Valude, Kuhnt, Fuchs, Fromaget, de Lapersonne, Aubaret, Hoffman and others. The author does not approve of removal of either lacrimal gland unless troublesome epiphora persists after a reasonable interval. The results are discussed in three relations, viz., cure of the lacrimal disease, cessation of the epiphora, and prevention of infection of the eye. In only one case out of the 35 the suppuration continued for one month after the operation. The epiphora persisted as before in 5 cases, in 11 it was notably lessened, and in 19 it either ceased or became insignificant. Gendron concludes with a reference to the bacteriology of the subject. He admits that the research has apparently demonstrated that the number of bacteria usually present in the conjunctival sac is greater after extirpation of the lacrimal sac. But that we may affirm that such microbes as the various staphylococci, the pneumococcus, and even the streptococcus are encountered much oftener in conjunctivæ where exists a chronic catarrhal affection of the lacrimal canal. C. H. B.

FIXATION OF THE EXTERNAL RECTUS MUSCLE IN NYSTAGMUS AND PARALYSIS.—COLBURN, J. ELLIOTT, Chicago, Ill. (*Amer. Journ. of Ophthal.*, March, 1906). The writer explains his position on this subject as follows: "Nystagmus of congenital origin, not due to atypic development of the brain, may be improved, in some cases, by the correction of an error of refraction and the addition of sufficient plus strength to allow of excessive convergence. When the error amounts to an exotropia, a strong plus glass before the fixing eye, and that eye strongly abducted, allows of a clearer vision with a minimum of oscillation. Noyes has reported good results from complete tenotomy of internal recti. In most of the congenital or idiopathic cases which have come under my observation the position of greatest rest was that of marked abduction of the fixing eye, whether the refraction was plus or minus, and the effort to see most accurately was made in that position. Whatever may have been the refraction, the object to be seen was held as closely to the eye as possible, apparently with the purpose of diminishing the excursion of the image upon the retinal field. Nystagmus has disappeared in patients suffering from a high degree of error of refraction after wearing a full correction, even though in some cases the visual acuity remained far below the normal. The above, together with observations made by Snell, Oglesby, Noyes, Stevens and others, would seem to contradict the theory of Van Arlt, that the object of the more or less rapid movement of the eyes, or eyes and head, was an effort to bring a greater number of percipient elements into the field."

He refers to the operation of partial fixation of the globe for the improvement of vision in certain cases of nystagmus, reported in 1904, and describes this as follows: "After complete cocain anesthesia the eye was placed in a central position by an assistant and a small wound was made in the conjunctiva at the temporal cul-de-sac for the purpose of marking its position. The eye was then rotated inward, the conjunctival cut enlarged and the muscle exposed. The external orbital-muscular check are freely excised and the periostium wounded. A double-armed suture was passed through the muscle, then deep into the periostium and out into the conjunctival sac and tied. I have now modified the operation by carrying the suture out through the integument and tying over a plate tin button."

At the suggestion of Dr. Casey Wood he resorted to this operation in two cases of paralysis following injury with good cosmetic effect.

"My limited experience with the operation for the improvement of vision in case of nystagmus leads me to consider it favorably. The cosmetic effect in suitable cases is all that can be desired. In paralysis of the ocular muscles or any set of them, it is certainly more desirable than the operation for exsection, and more satisfactory than the advancement of the paralyzed muscle without the fixation." C. H. M.

A NEW METHOD OF TREATING PULSATING EXOPHTHALMOS.—SATTLER (*Weiner Medizinische Wochenschrift*, March 3, 1906). Ten years ago a 17-year old girl received a blow over the upper orbital margin, where a pulsating compressible tumor developed, and another non-pulsating tumor developed on the inner orbital margin. There was probably a small perforation of the internal carotid inside of the cavernous sinus; the aneurysmal dilatation involved the frontal and angular veins. The treatment consisted in the application of a loose ligature over the common carotid, the laying bare of the sac and ligating it twice; the aneurysmal tumor was then resected and the superior ophthalmic vein ligated. The result was very satisfactory. J. G.

ENUCLEATION WITH LOCAL ANESTHESIA.—TERRIEN (*Archives d'Ophtalmologie*, February, 1906), claims that when circumstances make general anesthesia impracticable, enucleation can be performed with very little pain under local anesthesia.

The technique that he uses is substantially the same as that recommended by Weiss and Otto Meyer. After anesthetising the conjunctiva with several applications of a 4 per cent. solution of cocain, a solution of 1 to 150 is injected at the extremity of each of the principal meridians—the needle penetrating to the region of the insertions of the straight muscles—which produces a chemosis completely surrounding the limbus. While allowing time for the cocain to act, morphia is injected subcutaneously before commencing the operation. Care is taken not to make unnecessary traction with the strabismus hook. If any pain is felt a few more drops of cocain solution are injected between the conjunctiva and the ball. After the globe is liberated from all adhesions and before cutting the optic and short ciliary nerves, a solution of cocain, morphia and salt is injected with an Anel syringe into the region of the posterior pole. G. C. H.

OPERATION FOR THE RELIEF OF CICATRICIAL ORBIT.—BALL, JAMES MOORES, Saint Louis, Mo. (*Annals of Ophthalmology*, October, 1905). Two cases are reported in which Maxwell's operation was performed with successful results. Before the operations artificial eyes could not be worn, but after, the orbits retained large artificial eyes. The operation consists in making a lower cul-de-sac of the loose skin of the lower lid. In addition to the Maxwell operation it was necessary to use skin grafts to restore the upper cul-de-sac. M. B.

EXCISION OF THE SUPERIOR CERVICAL GANGLION IN INFLAMMATORY GLAUCOMA.—FOSTER, MATTHIAS LANCKTON, New York City (*Annals of Ophthalmology*, October, 1905). Mrs. A., aged 48, was first seen in December, 1903. She then had all the symptoms of glaucoma in each eye, but vision was good with her refraction corrected. The only symptoms she had ever had of possible increased tension were occasional halos around the lights. She was seen again in June, 1904. Her glasses needed changing. Her condition remained unchanged, except that the right field was possibly a trifle smaller. On the 30th of this same month a small foreign body was removed from the cornea of her right eye. On July 5th the tension was found to be increased. The next day there was ciliary injection and plus tension of both eyes, and an iridectomy was performed on each. The left eye went on to uninterrupted recovery and has never given any further trouble. On the third day the right eye passed into a state of acute glaucoma. Eserin did not control the tension, and a few days later another iridectomy was performed. This did not relieve the tension but did relieve the pain. Eserin was resumed, but exaggerated the symptoms rather than relieved them. A month later the superior cervical sympathetic ganglion on the right side was removed. The effects of this operation on the eye were slow in developing, but in a month's time the tension was normal and all inflammatory symptoms had previously disappeared. V = pl. By March the V = 0. By April 27 the eye was hard and painful and was enucleated. Reports upon the ganglion by Dr. Zabriskie and upon the enucleated eye by Dr. Oatman follow. M. B.

TWO SPLINTERS OF STEEL REMOVED FROM THE INTERIOR OF AN EYE WITH THE MAGNET.—MURRAY, W. M., Minneapolis, Minn. (*Ophthalmic Record*, January, 1906). The case reported was that of a blacksmith who was struck in the eye by a piece of steel while removing a horseshoe. He was seen two days later. There was a penetrating wound of the cornea, and the eye was much inflamed. The tip of the magnet was applied to the corneal wound and after breaking the current several times a piece of steel was extracted from beneath the iris. Evidences of another piece remaining was evidenced by a bulging of the iris, but it could not be extracted in the manner described. An incision was made into the anterior chamber through the sclero-corneal junction, the tip of a hand magnet introduced, and the particle of steel removed. Resulting vision 20/xxx. The author considers this case unique in that the eye contained two pieces of steel where only one piece would be expected, and that it teaches that we should always be on our guard against leaving behind a second foreign body when we are elated at having successfully removed one. M. B.

OPTIC NERVE.

OPTIC NEURITIS FROM COLD (A FRIGORE).—BICHELONNE (*Annales d'Oculisique*, February, 1906), reports a case of optic neuritis which he attributes to cold. A soldier 24 years of age, after having been fatigued and overheated in the September maneuvers, slept on the damp ground in a stable. The next morning there was a slight conjunctival discharge and a sense of heaviness in the right eye, and its vision was clouded. The vision continued to decrease, but it was not until three months later that the patient applied for treatment, when the ophthalmoscope showed optic neuritis with swelling, haziness of the vitreous, and a floating opacity. Subsequently there was optic atrophy. A number of cases in literature are referred to in which optic neuritis occurred under similar conditions. G. C. H.

A CONTRIBUTION TO THE STUDY OF PSEUDONEURITIS OPTICA.—TALMEY, MAX, New York (*New York Med. Jour.*, March 3, 1905). The writer calls attention to the existence of an ophthalmoscopic picture resembling optic neuritis in which careful examination shows that no inflammation of the optic nerve exists; for this congenital condition he proposes the name "pseudoneuritis optica." Reviewing the literature on this subject he failed to find the expressions pseudoneuritis optica, pseudopapillitis, spurious optic neuritis indexed in any medical dictionary or encyclopedia; furthermore, leading textbooks on ophthalmology either do not mention it at all or very superficially.

The ophthalmoscopic picture of pseudoneuritis optica presents in the main the most striking features of true neuritis and consequently the consideration of other points becomes necessary for a different diagnosis. The intensity of the symptoms will sometimes be of aid, while, for instance, a small or medium prominence of the papilla may be found in pseudoneuritis as well as in neuritis; a high elevation of its surface is only observed in neuritis; the same can be said of the turbidity or haziness of the papillary tissue. Circumscribed or diffuse hemorrhages are pathognomonic of neuritis. In other instances the diagnosis can only be established by several examinations repeated at long intervals. In pseudoneuritis the aspect of the fundus remains the same, while in neuritis a subsequent examination will not fail to reveal significant changes. The functional condition as determined by a single examination is not always reliable for a differential diagnosis, for weak sight may be present in pseudoneuritis, and good vision in neuritis. The field of vision is not affected in pseudoneuritis, but may also be unaffected in neuritis. The pupillary reactions exist in both and are absent in neuritis, when the latter is associated with blindness. As in the ophthalmoscopic picture, so here also, i. e., the functionating power, the constancy of the symptoms may determine the diagnosis. For long standing neuritis without marked changes of the functional ability is extremely rare, while in pseudoneuritis no alterations occur. The presence or absence of the usual causes of neuritis, as lues or cerebral diseases, will further help to establish the diagnosis.

Pseudoneuritis optica is congenital. It is so frequently accompanied by hypermetropia that it has also been termed "hyperopic disc." This identification of pseudoneuritis with hyperopic discs, however, does not seem to be justified. For very pronounced spurious optic neuritis is also found in emmetropia and in myopia. Furthermore, the degree of the hyperopia bears no relation to the ophthalmoscopic picture, a slight hyperopia may coexist with strongly pronounced pseudoneuritis, and inversely. Therefore no direct causal relation can be held to exist between hypermetropia and pseudoneuritis. The visual acuity and pseudoneuritis are not interdependent. Normal vision may be associated with pronounced pseudoneuritis, on the other hand amblyopia may be met with in slight pseudoneuritis. C. H. M.

ON THE CONDITION OF THE NEUROGLIA IN TABIC ATROPHY OF THE OPTIC NERVE.—SPIELMEYER, W. (from the psychiatric clinic of Prof. Hoche in the University of Freiburg, i. B. *Klin. Mon. fuer. Aug.*, 1906, i, p. 97), found with Weigert's elective method, that the manner and structure of the proliferation of the neuroglia of the degenerated optic path are the same as found in degenerations of the central fiber systems, e. g., pyramidal, posterior fascicles, etc. The augmented supporting substance consists of very numerous concurrent wavy fibers, which preserve their individuality and never coalesce, generally following the direction of the former optic fibers. They have a tendency to regressive metamorphosis, and show all kinds of its stages. Thus the atrophic optic nerve behaves just as the normal, viz., as Weigert expressed it, like white cerebral substance arranged in small bundles in comparison to the white substance of the entire brain. In longitudinal and transverse sections the glia pictures of the atrophic optic nerve bear a striking resemblance to those of the tabic spinal cord. The connective tissue also fills the gaps of the abolished nerve parenchyma in the shape of sclerotic fibers, originating in the perivascular tissue, of less amount, however, than the proliferations of the glia. Similar changes were found in the primary optical centers, the pulvinar thalami, the external corpus geniculatum and the central gray substance of the third ventricle. This confirms the investigations of Moeli, viz., that the central gray substance of the third ventricle is also a central terminus of the optic nerve. The histologic conditions are illustrated on colored lithographic plates. C. Z.

OPTICS.

THE WRITING OF PRESCRIPTIONS AND ADJUSTING OF EYE GLASSES.—(*The Hardy Messenger*, Chicago, May 1, 1906). The subject of eye glass adjusting has been, and always will be, more or less a problem with every oculist and optician, and the feeling that a few points as to the methods used by us might be of assistance to our customers led us to prepare the following directions:

First is the pupillary distance, which in an eye glass is dependent on two main points:

First.—The width of the patient's nose.

Second.—The size of lens that you prescribe.

Taking up the first point, it will be found that many narrow noses have eyes wide apart, and many large noses have the eyes close together. The first of these two subsidiary points is adjusted by having either a large lens or long posts, "C" or "D." In some cases a combination of the two is desirable.

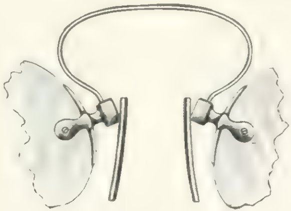

Figure 1.

The second requires smaller lenses, sometimes cut to a shorter oval, and even in some few cases slightly decentered toward the nasal side. "A" or even "AA" posts may be used in obtaining the results that you desire.

In some cases it is desirable to combine both of the above to obtain the desired pupillary distance.

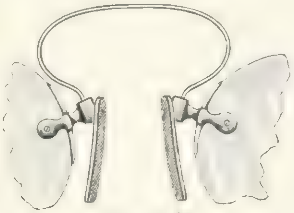

Figure 2.

Second is the spread of the guards. This should always be taken when the eye glasses are ON THE FACE, measuring both the width at top and bottom of the guards in this position, and by this is meant the distance that the guards are apart.

The greatest number of errors that come to our attention are due to measuring the spread of the guards at base much wider than is necessary.

Third, and something entirely new, but a point which we find expert adjusters are giving more attention to than heretofore, is the curving and facing of the guards.

Curving.—The guards may be curved back only at the top (see illustration No. 4), or curved back both at top and bottom (see illustration No. 5).

As to the facing of the guards, they may be left at right angles to the face of the lens (see illustration No. 1).

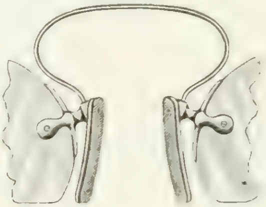

Figure 3.

They may be faced back 10° to conform to the slant of the nose (see illustration No. 2), or they may be faced back 20° for a wide angle nose (see illustration No. 3).

Of course, the facing and curving of the guards may be combined. Cork guards, owing to their construction, can not be curved.

Fourth, the height of post. This is generally placed 1/16 above center on ordinary eye glasses, and on Vici Shur-On or Finch, it is placed on center, unless we are otherwise instructed. To lower the lenses the post should be placed 1/8 of an inch above center, and in extreme cases 3/16 of an inch above center. If still lower adjustment is desired, it can be obtained by selecting a guard that will accomplish the purpose in connection with the drilling.

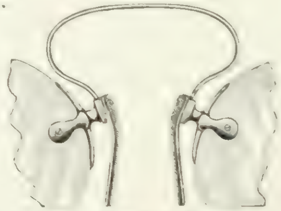

Figure 4.

To raise the lenses in skeleton eye glasses, drill them on center, but rarely, if ever, below center. If the lens must be raised still higher, it can be done by selecting a guard that will accomplish the result that you desire.

Noses requiring this last adjustment are the hardest to fit, and in many cases should be induced to wear spectacles.

Fifth.—The distance between the eye lashes and the lens. Ordinary styles of all offset guards are so made that they set the lenses the correct distance from the lashes in the majority of cases. For long lashes certain guards have longer arms than others, and they should be prescribed for such cases.

For extremely long lashes, combined with a flat nose, inset posts to set the lenses out can be used.

For deep set eyes these same posts REVERSED to outset setting the lenses in will give the desired results.

These posts come in two lengths, 1/16 and ⅛ of an inch, inset or outset.

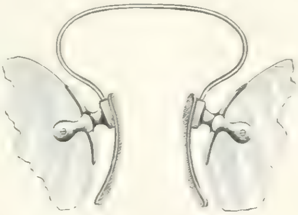

Figure 5.

Some noses are non-symmetrical, slanting more to one side than the other. This can be overcome by slanting the top of one guard slightly in and the other slightly out. The results obtained will quickly tell which way they should be slanted.

As to the selection of guards and styles of mounting, this is something that experience alone will teach.

Finally, we have rarely seen an eye glass that did not need some minor adjustment when delivered to patient, besides a little instruction to patient as to the proper way in which to set them on the nose and wear them. The guards should be set in and not simply slipped on; in other words, the flesh should come in front of the plane of the guard instead of back of it. H. V. W.

ORBIT.

Exostosis of the Orbit.—Stevenson, Edgar, Birkenhead (*Liverpool Med.-Chir. Journ.*, January, 1906), reports the case of a girl of 22, who had noticed protrusion of the globe downwards and outwards since six months. This increased rapidly without pain or disturbance of motility, vision remaining normal. A small hard mass was felt under the upper and outer margin of the orbit, which, on operation, was found to be much larger than had been expected and had its base in the frontal sinus. It was of cancellous tissue with an extremely hard shell and a broad base which was easily wrenched loose. Recovery was uneventful. P. H. F.

ORBITAL CELLULITIS CONSECUTIVE TO AN ACUTE EMPYEMA OF FRONTAL SINUS.—LAFON (*La Clinique Ophtalmologique*, March 10, 1906). The oculo-orbital complications of frontal sinusitis are well understood, but the case reported by the author is of interest, including, as it does, the study of the infectious cause. The patient was a woman of 27 years, and was first seen Nov. 14, 1905; no hereditary or personal antecedents worthy of note; began to have pain in right eye from November 10 to 11, and the next morning observed that the eye protruded. On November 12 and 13 the pain in the orbital region was very severe, the exophthalmos more marked, the lids swollen and could not be opened. On examination it was found that lids were edematous and red; the exophthalmos of 10 to 12 mm.; the cornea, which was transparent, was surrounded by a livid red chemotic cushion; the mobility of the eyeball very limited; ophthalmoscope revealed papillary congestion. Patient had had a severe coryza some days before these conditions supervened. Catheterization of the frontal sinus followed by lavage yielded pus, though through an incision in the naso-front-angle no pus could be had. The exophthalmos diminished, and by November 16 the condition was much improved. Bacteriologic examination with cultures gave staphylococci and bacilli, the latter similar to the so-called pseudo-diphtheritic bacillus, both of which are found in the normal nasal fossa. B. E. F.

PARASITES.

FILARIA OCULI.—ROCHAT (*Tydsch. v. Geneesk.*, Feb. 24, 1906), was consulted some two months before by a man whom he had previously treated for hordeola and whose eyes were normal. He now complained that his eyes itched and teared. Before the looking glass he had noticed in the white of the eye a "small nerve which moved." On looking strongly downward and after lifting of the upper eyelid, near the upper fornix, a transparent thread was seen, with slow tortuous movements. It could be removed with a pair of forceps through an opening in the conjunctiva. It was a filaria loa. Patient had returned from the Congo three years before without noticing any abnormal symptom; his blood was free of embryos, the urine normal (he had hematuria in the Congo); no other specimens have shown themselves. E. E. B.

FILARIA LOA.—VAIL, DERRICK, Cincinnati, Ohio (*Amer. Jour. of Ophthal.*, December, 1905). Entozoa affecting the human eyes are rarely encountered in America. The writer reports the second case in which the filaria loa was extracted within the confines of the United States. The patient had become affected while residing in

Africa in 1899: a number of worms were extracted from beneath the skin of the eyelids and other parts of the body during the stay of the patient in Africa. In August, 1901, the writer's examination failed to reveal the existence of any parasite; but in June, 1903, the patient returned and stated that he felt these “eye worms” at times in the eyelids, again in the eyeball and frequently about the angles, ribs and wrists. In September, 1903, the writer saw “a distinct, independent movement, like what would be made by a small worm an inch long, crawling about under the skin of the upper eyelid. The movements were slow and somewhat clonic. During one of these extractions he grasped the most prominent loop of the worm by means of fixation forceps, and then by means of scissors and forceps succeeded in extracting the worm without its being severed or wounded.” At the present time, two years and eight months since the patient left Africa, these worms are as active as ever, four being felt at various times, limiting their peregrinations to the extremities and especially the tissues about the eyes, especially on chilly days out of season and cold days following a warm spell, and without interference with the general health.

An interesting extract from Manson on “Diseases of Tropical Countries” is given, together with the complete bibliography on the subject. C. H. M.

DESTRUCTION OF BOTH EYES BY LARVÆ OF FLIES.—SCHULTZ-ZEHDEN, Berlin (*Berl. Klin. Woch.*, 1906, No. 10, p. 286). About a quart measure full of larvæ were collected from various parts of the body, conjunctival sacs, nose, ears, etc., of a woman, aged 47, who had been found in the fields and brought to the hospital. The lids, swollen, hard and excoriated, discharged muco-pus. The conjunctivæ were thickened and grayish red. Both globes were almost immovable. The right cornea was destroyed, only a small perforated seam was left, the iris lay completely bare, lens was missing, the pupil was filled with dirty-looking vitreous. During exenteration Schultz-Zehden found a larva of a blow fly (musca, Schmeissfliege), 13 mm. long. It consisted of 11 segments, separated by brown rings, which bore numerous small hooks. The cornea of the left eye was destroyed by a large ulcer with dilapidated borders, in which iris and lens protruded, necessitating enucleation, which was performed. The patient suffered from arteriosclerosis due to chronic alcoholism, and died a few weeks later. The anatomic diagnosis was myocarditis, cirrhosis of liver, arteriosclerosis. Schultz-Zehden gives a synopsis of the various species of flies whose larvæ have been observed to cause eye troubles. C. Z.

PATHOLOGY.

HETEROPHTHALMUS (HETEROCHROMIA).—DE VRIES (*Tydschr. v. Geneesk.*, Feb. 24, 1906), described eight patients with heterochromia. He first saw it in a young lady, whom he treated in 1901 for a probable tuberculous slight iritis and where the iris of that eye was less brown than in the healthy eye, which difference increased slowly. Descemetitis was present with opacities in the vitreous and some small foci in the chorioid, while the iris never showed synechiæ, nor was hyperemic and always reacted well; tuberculosis was present in the family, and a sister was blind in one eye through tuberculosis of the chorioid. Since that time he saw 11 cases of heterochromia. In one case the difference in color of the iris appeared after glaucoma. He operated, also, on two patients for acute glaucoma directly after the first attack, where later the operated eye became paler, but also the iris became smoother; these are cases of atrophia iridis after glaucoma.

Five patients suffered from cyclitis; these were not known to have had different eyes; in 3 cases the difference in color is so small that it may have been overlooked; the fourth patient is the one above mentioned; the fifth is described with one brown eye and one bluish-gray. This difference in color can not be overlooked and depends necessarily on cyclitis. The lighter eye is myopic 3 times out of the 5; in 4 of the 5 astigmatic. Compound myopic astigmatism developed in the first patient during observation. In 3 cases the heterochromia exists without further anomaly; the brown eye and not the light eye suffered in one patient with obscuratio lentis, which De Vries considers to be senile. In these 3 cases the possibility exists that they are congenital or that a cyclitis existed which had healed.

In one case heterochromia was congenital as the anamnesis demonstrated; patient had had iridocyclitis in middle life.

We know that heterochromia can be the consequence of cyclitis, and also of so slight a cyclitis that it may be overlooked by the patient. The anamnesis shows that it is congenital in some cases, or when it is in consequence of a cyclitis this cyclitis must have happened very early in life. With the congenital form we have to accept greater predisposition for cyclitis for the light eye. He, therefore, thinks that all cases are connected with cyclitis. Description of the case follows.

Discussion.—Mulder can not accept the division into congenital, originated in cyclitis and glaucoma. It is possible that congenital heterochromia predisposes to glaucoma. He observed a case of congenital heterochromia where the light eye acquired a peculiar form of glaucoma, while the dark eye remained normal after 8 years. Hutchinson mentions a similar case. Boltman said that Fuchs considers the heterochromia to be the cause. Haab says the result of cyclitis. He observed a 32-year-old patient with a light blue eye, with opacities in the vitreous and punctate cataract, while the other eye was dirty-blue. A 69-year-old woman had the blue right eye with Descemetitis, while the other normal eye was of a greenish-yellow tint.

Nicolai knows a patient with an iris, which is one-half light, the other half being dark, and who has at the same side of that eye parts of the skin and mustache free of pigment.

Cuperus often saw deaf-mutes with heterochromia.

Lans saw a case of abrupt change of color of the iris.

E. E. B.

ON COMPLICATIONS OF HETEROCHROMIA.—FUCHS, ERNST, Wien (*Zeitschrift fuer Aug.*, 1906, xv, p. 191), reports 38 cases, observed within the last 15 years, of which he kept special records. The majority occurred in men, and then in the third decade of life. No constitutional causes could be ascertained, which generally explained the predominance of chronic cyclitis with percipitates in women. In most pronounced cases one iris was brown, the other blue or gray, or the irides of both eyes were light, but of different hue, generally such that the darker iris was greenish, the lighter gray or blue. The examination of a green iris with a strong magnifying glass shows numerous minute yellow spots of the anterior layers, which give the effect of green, just as a mixture of blue and yellow pigments, by subtraction. In some cases the one iris was gray, that of the diseased eye blue. Here the anatomic difference lies not in the different amount of pigment, but in the thicker stroma of the gray iris. In any case the difference of color is caused by the condition of the stroma, not of retinal pigment, which, however, may also be altered, secondarily by chronic inflammation. Where specially noted, the hair on the head was dark brown or black even when both irides were light, showing an insufficient development of the pigment of one iris or of both and then unequally.

The eye with the lighter iris was cataractous in 33 cases. Most frequently the cataract commences at the posterior cortex in form of opacities, either fine like dust, or irregular like cobwebs, never presenting the typical stars or rosettes. Heterochromia is regularly accompanied by precipitates on the posterior surface of the cornea. The pupil was larger on the lighter eye, sometimes due to increased tension, but mostly from slight atrophy of the sphincter. This corresponds to the clinical picture of serous iritis. From the anatomic examinations of 6 cases of hetorochromy, Fuchs, however, defines them as cases of chronic iridocyclitis. Where an ophthalmoscopic examination was possible, Fuchs found opacities of the vitreous, which he ascribes to the affection of the ciliary body, and in 2 cases small inflammatory foci at the periphery of the chorioid.

As a rule, opacities of the lens and cyclitis were combined, and Fuchs leaves it undecided whether cataract may ever develop on the lighter eye without involvement of the uvea.

The anatomic investigations of Fuchs elicited: substitution of the normal cellular net by numerous nuclei, the descendents of the normal stroma cells, and new formation of fibrillar connective tissue in the stroma of the iris, while in chronic iritis an infiltration with lymphocytes takes place.

With regard to the etiologic relation of the 3 symptoms, heterochromia, cyclitis and cataract, Fuchs remarks the following: Heterochromia may occur as lusus naturæ, without any disease, or it is pathologic. Here a morbid cause, so far unknown, prevented the iris from acquiring its normal amount of pigment, as shown by the fact that most of these patients have dark hair and ought to have dark irides, and at a later date show the disease proper. The morbid cause has a particular affinity to the uvea, especially its anterior portions. Its action commences before or shortly after birth, since the variety of color of both irides is observed in the first few years of life, and continues for many years, producing the disease of the eye frequently at advanced age, gradually without external inflammatory symptoms. No other changes are observed but heterochromy, cyclitis and cataract. The cataract is most likely due to cyclitis. If the affection be due to anomalies of circulation or of any interior secretion (one may think of Addison's disease or vitiligo) or anything else, it is peculiar that only one eye should be affected. Therefore, Fuchs advocates to examine cases of bilateral juvenile cataract very carefully for precipitates on the posterior surface of the corneæ, especially if both irides are light and the hair is dark, and cases in older people with light irides and cataract, which has a marked light color or whose nucleus when extracted is white and soft. In 2 cases of this latter kind (one aged 40, the other 65) Fuchs found in the excised pieces of iris the same changes as in heterochromia. He finally emphasizes that he observed in 3 of his cases small chorioiditic foci in the darker eye and at the anatomic examination of a case of heterochromy changes in both eyes.

C. Z.

CONTRIBUTION TO THE STUDY OF PATHOLOGIC HIPPUS. A CASE OF UNILATERAL RHYTHMIC HIPPUS COMPLICATING PARALYSIS OF THE THIRD PAIR.—AURAND and BREUIL (*Archives d'Ophtalmologie, February,* 1906), report the following case: A female child, 8 years of age, was brought to the dispensary with strabismus of the right eye due to paralysis of the third pair. Soon after its birth it was noticed that the eye deviated outward and the lid drooped. With this ophthalmoplegia there was slow and regular dilatation and contraction of the pupil. Each movement lasted about fifteen seconds, during which the diameter of the pupil varied from 1.5 to 6 mm. and was independent of variations of light. Mydriatics and miotics acted only a little less quickly and decidedly than normal.

The authors think that this rhythmic movement was due to a sort of automatic action of the peripheric iris centers which are ordinarily controlled by other centers. Their isolation under certain conditions may account for this abnormal movement. G. C. H.

ON THE PATHOLOGY OF CHORIO-VAGINAL (POSTERIOR VORTEX) VEINS.—COATS, GEORGE, London (*Ophthalmic Review,* April, 1906). Attention has recently been called to the occurrence, in highly myopic eyes, of large venous trunks which closely resemble vortex veins, but which disappear in the neighborhood of the disc; they were pictured by Liebreich and by Czermak, but first clearly recognized by Schoute in 1898; the atlases of Oeller and of Haab also give illustrations of this condition.

The writer considers these veins as uncommon, but not extremely rare. They occur as large, sometimes enormous, vessels, without luster or reflex, lying behind the vertical vessels. They collect blood from a ramified system of broad trunks, often extending over a large area of the fundus, very much in the same manner as a vortex vein, so that the term "posterior vortex vein" is clinically very apt. The large trunk formed by the junction of these ramifications disappears at or near the edge of the disc, or within a myopic crescent, or at its outer edge. They are not confined to one or other side of the disc, but are probably seen most frequently downward and outward. The condition is not to be confounded with mere visibility of the chorioidal vessels, due to thinning and atrophy of the chorioid. The course of the blood toward the disc and the disappearance of these huge trunks at its edge constitute something quite abnormal and very striking when attention has been called to it. So large and dull colored are they that in many cases they have been taken for hemorrhages.

Up to the present practically nothing has been done from the pathologic standpoint to elucidate these appearances, and there is no exact knowledge as to what becomes of the veins after their disappearance and into what vessels their blood is poured; their occurrence has not been explained, nor why they should be so frequently found in highly myopic eyes. It has been supposed that they are simply congenital abnormalities of vortex veins which are notoriously inconstant in number and position. Van Geuns pointed out that these vessels are probably the same as the opticociliary veins, representing a congenital enlargement of the normal minute anastomoses between the chorioidal and central vessels of the disc.

The writer was able to examine microscopically a highly myopic globe in which this condition occurred. He gives particulars of the pathology of this abnormality and sums up by submitting that "chorio-vaginal veins are, anatomically, large veins which pass from the chorioid into the nerve and course backward close under the pial sheath; that they are formed by enlargement of the anastomoses which normally occur in this situation, and that this enlargement constitutes in most cases a collateral circulation to compensate for a hindrance to the exit of blood by the normal vortex veins." The term "chorio-vaginal," first used by Oeller, is the best for these veins, as it describes their anatomical course. The course "posterior vortex" veins should be given up, as it implies that they are abnormally placed vortex veins, a supposition which is untenable, both on anatomic and theoretical grounds. C. H. M.

An Improved Method of Mounting Eye Specimens in Formalin Solution.- Smith, Priestley, Birmingham (*Ophthalmic Review,* March, 1906). A 5 per cent solution of formalin has certain advantages over glycerin jelly for the mounting of ophthalmic specimens: it is more transparent and absolutely colorless; it keeps the specimen in a condition suitable for section-cutting at any future time; it is prepared without difficulty. The writer described a method of formalin-mounting in 1897, but found that such preparations spoiled before long as a result of entrance of air.

He now describes an improved method. The vessel employed is a square, upright, stoppered bottle, the neck of which is as wide as the body. The divided eye is placed upright against one side of the bottle and is held in position by a background of the thickest white drawing paper (not cardboard), in which is cut a round hole to receive the back of the half eye. The space behind the paper is packed with small bits of absorbent cotton. The bottle is filled with 5 per cent. formalin solution; it is tall enough for any air remaining in it, or entering subsequently, to be well away from the specimen even when the bottle is held in a sloping position. The height gives room for a label above the specimen. C. H. M.

IS "BLACK" A SENSATION?—WARD, JAMES (*Brit. Journ. of Psych.,* October, 1905). The majority of experts answer in the affirmative, but the plain man, when the question is understood, in the negative. The latter position briefly stated, implies that darkness and blackness are distinguished as negative sensation and positive perception. There is no exact parallel between darkness and stillness; but only because blackness has become a "secondary quality" of objects. The "dark field" only extended when interpreted as visually empty space. Helmholtz, on the whole, favors the negative character of black. On the assumption of its positive character Hering's theory starts from the facts of contrast, but these are not incompatible with a negative character of black. His medium gray is at variance with the facts of visual adaptation, and cannot be identified with the darkness of the adapted eye. The assimilative process said to underlie black is not proven. Wundt views black as the limit of an intensive series; black as positive and the qualitative opposite of white, first constant in intensity and then variable; black as an anabolic, inhibitory process which is yet an independent one. G. E. Mueller's theory, an attempt to remedy the defects of Hering's, accounts for the series of grays by variations in an endogenous "medium gray" which result from retinal excitations; this assumption seems insufficient to meet the facts. It is physiologically improbable, and its "singularity" is not explained. It is desirable to let the facts speak for themselves. The older and simpler view is not yet exploded. Hering has corrected Helmholtz, but has not yet established his own theory. Its difficulties suggest that the assumption of the positive character of black as a sensation is unwarranted. P. H. F.

FECHNER'S "PARADOXICAL EXPERIMENT" AND THE PREDOMINANCE OF CONTOURS IN THE STRUGGLE OF THE TWO VISUAL FIELDS.—MCDOUGALL, W., London (*Brit. Journ. of Psych.,* vol. i). Fechner's paradox consists in this, that if a white area is presented to one eye and then a dull gray area of similar form and size to the corresponding parts of the other eye, the sensation of brightness referred to this common area is not increased by the additional stimulus of the light coming from the gray area, but is diminished by it. This, together with the familiar phenomenon of the predominance of contours, may be explained by the following principle:

A visual stimulus of given intensity and extension sets free a certain quantity of nervous energy which, flowing through the conduction paths of the cortex, is the physical basis of the sensation of light. Each element of the conduction path corresponding to unit of area of the retina, tends to draw to itself as much as possible of the total enegy set free and so contribute to the whole sensation the most vivid possible sensation element. This competition for the energy set free is keenest between adjoining elements and diminishes rapidly with increasing distance. While the cortical paths of two corresponding elements of the two retinæ are not identical, they are yet so related that either one stands in the same relation, as regards this competition, to the elements surrounding the corresponding element of the other eye as to those surrounding itself. This is supported by the following: If fixation of the combined bright and dark areas is prolonged, some "struggle" usually occurs, i. e., alternate brightening and darkening. If the darker field is presented first, no paradoxical effect occurs. The effect is greatest when the two areas coincide; if either overlap the other the effect is proportionately lessened. If the darker area is made considerably smaller than the brighter one there is no paradoxical effect, but the two brightnesses sum together to form at once a bright area surrounded by a darker zone. The same holds true if the darker field is made up of a number of small areas separated by black spaces. We know that a white surface seen by two eyes appears only very slightly brighter than the same surface seen by one eye, whereas when the illumination of a white surface presented to one eye is doubled the brightness or intensity of the sensation is considerably increased. Hence, in the case of the paradoxical effect, the psychical summation does not compensate for the physiological subtraction from the energy of the excitation process initiated by the brighter light. P. H. F.

TWO CASES OF LID-CLOSURE PUPIL REFLEX.—BALLANTINE ARTHUR J., Glasgow. (*Ophthalmoscope,* February, 1906). This phenomenon was observed in a poorly nourished girl of 17 who was suffering from chorea, but the latter condition was found later to have no causative influence. The reflexes and eyes in every particular were normal, except for a slight fear of light, when she would have a sudden lid spasm, after which it was observed that the pupils were contracted then slowly dilated. This pupillary contraction could be induced by asking patient to close the lids while they were being forcibly held apart. It was also found that the same contraction could be induced in the same way while the lids were being actually held away from the globe, thus controverting the theory that the contraction is due to pressure upon the globe. The same phenomenon was observed in a young woman, highly myopic, who had no reaction to accommodation and convergence. A search of references shows that it was first described by Galassi, then by Gifford (Omaha), Westphal, Piltz, Antal, Kirchner, Roth, Franke and Schanz. There seems to be no agreement upon the diagnostic significance of the reflex. The author believes the reflex is rather an associated action of the sphincter iris and orbicularis muscles. M. B.

The Sensations Excited by a Single Momentary Stimulation of the Eye.—McDougall W., London (*Brit. Journ. of Psych.*, vol. i), presents experimental evidence of the following propositions:

1. The primary response to a single stimulus is a series of pulses of sensation of diminishing intensity. The series is longer and the initial pulses are briefer, more intense, and change more rapidly, the more intense the stimulation.

2. The initial pulses are due to processes initiated in the cones; the terminal pulses, the rods. In pure red light and in the completely bright adapted eye the rods are not affected.

3. After a very brief interval the primary response (pulses) is followed by the secondary response, a steady persistent after image, which is brighter and more persistent the more intense the stimulus. This is the ordinary after image due to the continued action in the rods and cones of exciting substances formed by the decomposition of the visual purple.

4. The so-called "recurrent image" or "Bidwell's ghost" following a moving image and separated from it by a dark interval, is merely the last of the series of pulses of sensation, the intermediate members of the series being inhibited by the bright initial reactions which constitute the leading image.

5. The "ghost" seen in the case of a traveling object light of moderate intensity is almost entirely due to a reaction of the rod apparatus, the apparatus of vision in a dim light.

6. The colorless sensations due to excitation of the rods are developed more slowly than those of the cones, the interval between the moment of stimulation and that of apperception being 1/18 of a second greater in the case of the former. P. H. F.

On Binocular Flicker and the Correlation of Activity of "Corresponding" Retinal Points.—Sherrington, C. S., Liverpool (*Brit. Journ. of Psychology,* vol. i), concludes that the physiological initial stages of the reaction generated in either component of a pair of corresponding retinal points proceed without touching any of the apparatus of the twin point. Only after sensations initiated from the right and left points have been elaborated and have reached a dignity and definiteness rendering them well amenable to introspection, does interference between the reactions of the two (left and right) eye system occur. Since left and right end results emerge pure, hybridisation cannot have mixed the early stages in their evolution. The binocular sensation attained seems combined from right and left uniocular sensations elaborated independently.

P. H. F.

THE SIGNIFICANCE OF THE PUPILLARY REACTION DURING ANESTHESIA.—NORTHROP, E. R., Spokane (*Northwest Medicine*, April, 1906), notes that the loss of the corneal reflex has been used as an index of the degree of narcosis for many years, but that it is unscientific and useless, and its application a score of times during a single operation, positively barbarous. While there is no one signal that is an infallible guide, the pupillary reaction is the nearest approach to it. A rapidly dilating pupil means danger, and a fixed, dilated pupil extreme danger. A contracted, immobile pupil usually means safe surgical anesthesia; oscillation indicates diminishing narcosis. The pupil is sometimes modified by the manipulation of excessively sensitive tissue or by suddenly changing the patient's position. In the primary stage of ether anesthesia the pupils generally dilate but react well to light. As ether is added, the pupil contracts more and more, and reacts sluggishly to light, finally becoming immobile, having reached the "mid-point" (Hartley) of safe surgical anesthesia. If the anesthetic be pushed, the pupil will dilate and finally cease to react, the cornea becomes insensitive, and danger signs appear, indicating the approach of cardiac or respiratory failure, or both. If the ether be discontinued the patient will begin to react, the pupil gradually going back through the same series of changes, reversed, or it may dilate suddenly, reacting to light, and the patient begins to struggle or vomit. In chloroform narcosis the changes are similar, but more rapid, and must be watched for with even more care. A point to be remembered is that the cornea is affected early by chloroform.

P. H. F.

PULSATILE PHOSPHENE (ENTOPIC PHENOMENON OF THE ARTERIAL PULSE).—ANTONELLI (*La Clinique Ophtalmologique*, March 10, 1906). Baslini, of Milan, in the February number of the *Archives d'Ophtalmologie*, called attention to an entopic phenomenon which Antonelli believes had not been recorded. Without considering the right of priority of publication, Antonelli desired in his paper to confirm the fact. One evening four years ago. when tired, after going rapidly up three flights of stairs in the dark he observed during the time he was groping his way trying to place the key in the lock, a small luminous spot which appeared and disappeared rhythmically before the open eyes. He states that the impression was that of a luminous pulse, which was synchronous with his temporal arterial beat. This phenomenon be could produce at any time afterward on ascending the stairs in the dark.

Antonelli, in referring to the explanation of the phenomenon, raises the question as to which arterial system is involved in its production. Is it that of the neuro-retinal system—the central artery of the retina and its branches which transmit the abnormal rhythmic shock to the elements of the neuro-epithelial layer and give the mechanical stimulus, as by the known law of pulsatile phothestesia—or is it, on the contrary, through the ciliary arterial system being abnormally filled? Baslini adopts the first hypothesis. Antonelli thinks it may be advantageous to seek for the phenomenon among those with certain cardiac lesions, arteriosclerosis and in the glaucomatous. B. E. F.

A NEW ENTOPIC PHENOMENON.—BASLINI (*Archives d'Ophtalmologie*, February, 1906) reports that after mounting the stairs very rapidly and reaching the top in the dark he noticed a bright spot before his eyes, which appeared and disappeared synchronously with the pulsation of the heart. The retina was excited by the excessive pulsations of its arteries and responded, as it does with the phosphenes caused by pressure upon the ball. G. C. H.

RETINAL CURRENTS.—DE HAAS, H. K. (*Tydschr. v. Geneesk.*, Feb. 24, 1906), describes the objective examinations made in the study of the senses, especially those with the galvanometer. The electric current between the cornea and sclerotic is stronger in proportion to the position of the second pole backward on the sclera, the first being on the cornea; this is the current of rest for the dark eye. While experimenting this current was mostly compensated. On illumination the action-current is produced. The probability that this current originates in the layer of the rods and cones (Kuehne and Steiner) is demonstrated by Beck on the eyes of cephalopods, where the layer of the rods and cones is separated from the other layers of the retina. Holmgren found the normal action-current when he had cut the optic nerve two years previous intracranially. With a descending total atrophy of the optic nerve the cones and rods react normally to light. With a moment stimulus the result is only dependent upon the energy of the stimulus; this is for the frog's eye with strong light for an illumination of about six seconds; for weak light the illumination time had to be much shorter and the result corresponds to the definititon of moment stimulus.

Talbot's law demonstrates that intermittent light of sufficient frequency to produce a continual light impression seems to be as strong as a continuous light, which produces the same average quantity of light energy in the unit of time. The action-current of the frog's eye confirms this law; continuous light gave a scale reading of 193—twice as strong—but intermittent light with the light and dark phases of the same duration reads 195.3, exactly at 1.2 per cent.

According to Fechner's law the reaction is proportionate to the logarythm of the stimulus. The action-currents of the frog's eye gave a very irregular curve, decidedly deviating from the law of Fechner.

The photo-electrical reaction has positively confirmed that the cones are used for seeing in strong light and for color perception, while the rods serve for perception with weak light (Himstedt and Nagel, Piper). The action-currents of retinæ of day birds, that is, retinæ composed almost entirely of cones, hardly react with weak light and do not become more sensitive after adaptation to darkness. On the contrary the retinæ of night birds, which are made up mostly of cones, were very sensitive for dark adaptation; they became about 100 times more sensitive after ten minutes' rest and reacted strongly to weak light.

For the human eye, yellowish-green has the highest value as a stimulus, with this difference: that the optimum of the reaction goes more toward the green with weak light, more to the yellow with strong light. Himstedt and Nagel found the same with the action-current for the frog's retina which possesses both rods and cones. The curves from the action-currents which Piper found for the rod-retinæ of different night birds, demonstrated that the rods are more sensitive for the blue end of the spectrum, compared with the curves of the cone-retinæ of day birds.

Trendelenburg measured the absorption in the rod-red of light of different parts of the spectrum. Piper found that the effect of monochromatic light on the rods exactly agrees with the intensity of the light absorption in the rod-red.

The retinal currents will give important data as regards the color theories of Hering and Young-Helmholtz. If assimilation produces red, then dissimilation produces green; that assimilation should be a stimulus is unique in physiology, and we have some right to expect that when green produces a current in one direction red would produce a current in the opposite direction. The contrary is proven: all parts of the spectrum produce action-currents in the same direction. Illumination and removal of this produce an electric reaction of the same direction. This fact would show that black is a stimulus; it gives, however, no reaction opposite to white. Gotch measured the retinal currents of the frog for different parts of the spectrum with a capillar-electrometer; the latent stadium varied with the color, while three parts in the spectrum exist, which act differently: the latent stadium for red is 0.28 second, for green 0.18 second, for violet 0.2 second. These numbers plead for three retinal elements for perception of the red, green and violet parts of the spectrum. De Haas does not think these demonstrated, because Gotch's publication does not contain the condition of the action-current for the intermediate colors. We might except for orange or yellow a double electromotor action corresponding to the quick reaction for green and the slow for red; for white three phases might be expected. The curves do not show it, being not enough enlarged, so that better technic might clear this point. The retinal currents do not show specific fatigue for colors, as Waller showed with a successive method and De Haas with a simultaneous method, which pleads against different retinal elements for different colors. Still it is remarkable that the latent time of the action-current of the frog's retina differs for the different parts of the spectrum, according to the theory of Young-Helmholtz (see *Annals of Ophthalmology,* vol. xiii, 1904, pp. 160-163). E. E. B.

REFRACTION AND ACCOMMODATION.

ASTHENOPIA AND ITS SEQUEL.—GIARTH, D. I., Kittanning (*Med. Council,* January, 1906), considers the eyes when defective in refraction (*sic*), or when imperfectly adjusted, an important and commonly neglected factor, both in causing and in perpetuating disease. There is no doubt of eyestrain being a prolific cause of functional nervous disease, so that hope of recovery or relief is extended to many sufferers. There is a prejudice in the laity and among some medical men against the use of glasses when they can be avoided, because "a person becomes so dependent on them." Ambition for study has often been balked by headaches and neurasthenia due to uncorrected errors of refraction. More harm is done to school children by overtaxing their eyes than overtaxing their minds. G. refers to cases of retinitis from overwork, excessive light and exposure, without any evidence, clinical or ophthalmoscopic, of organic disease. In many there was disturbance of color sensation and in all some marked and unrecognized error of refraction was detected, with pre-existing eyestrain. P. H. F.

WHAT ARE THE SO-CALLED REFLEXES WHICH CAN PROPERLY BE REFERRED TO EYESTRAIN?—HOWE, LUCIEN, Buffalo, N. Y. (Transactions of the American Ophthalmological Society, 1905). With the object of verifying or refuting the claims of the author of "The New Ophthalmology," Howe sent a circular letter to 208 ophthalmologists, asking for their personal experience in the question of reflexes brought about by eyestrain. This was with special reference to conditions and disease other than the symptoms referred to the eyes, to the head in general and the stomach. Howe's conclusions were: 1. That the personal equation enters largely into the reports received. Most of the observers had seen few or none of such reflexes. 2. The large experience represented by the answers shows beyond question that in the future it will be impossible for any one to repeat the claim that these reflexes or conditions or any of a similar kind are considered by most American ophthalmologists to be the result of eyestrain. This is simply the assumption of a few enthusiasts. 3. An important cause of the confusion is the lack of definition of the morbid conditions under discussion. 4. Another cause is the lack of exact diagnosis; one man may call a hyperemia of the retina what another would call normal.

E. E. J.

ASTHENOPIA AND HEADACHE.—PIEKEMAN (*Tydschr. v. Geneesk.*, Feb. 17, 1906) refers to the connection between headache and refraction anomalies, especially hypermetropia and astigmatism, where the vision can be normal and where the only therapy for the headache consists in properly fitted glasses. The characteristics of this condition are sensation of pressure over the eyes (as if they were pressed downward), which becomes worse with exertion, but is constantly present; a great sensitiveness for light (especially sunlight and the light reflected from white clouds and walls); much moving around, as in crowded streets, etc.; in the serious cases the appearance of dizziness, and sometimes nausea, even vomiting.

E. E. B.

TWO CASES OF APHASIA, COMPLICATING OPHTHALMIC MIGRAINE, DUE TO ERRORS OF REFRACTION.—DE JESUS GONZALEZ, J. LEON, Mexico (*Annales de Oftalmologia*, July, 1905). The reporter describes two typical cases of ophthalmic migraine which were accompanied by aphasia, the first, a lady, 32 years old, seen during an attack, presenting the following symptoms: Intense left temporal pain, nausea, dim vision, vomiting and inability to articulate. These attacks recurred several times during the course of two months, appearing occasionally on the right side as well, but unaccompanied by aphasia. The ametropia, compound myopic astigmatism, was corrected; no reappearance of the attacks during two years. A very similar train of symptoms that appeared during several years in the second case, a physician, has not returned since the correction of his myopia and astigmatism several years ago. The reporter explains the aphasia by an ischemia occurring at the center of speech, situated in the cortex of the left frontal lobe, induced by the ametropia, the ocular fatigue causing a reflex vaso-constriction in the cerebral arteries and the vaso-constriction causing the migraine and aphasia. H. M. F.

A CAUSE OF PSEUDO-MYOPIA.—GIBSON, J. LOCKHART, Brisbane (*The Australian Med. Gazette,* March, 1906), has recognized for many years that nasal obstruction, especially postnasal obstruction, emphasizes the presence of errors of refraction. His attention was first called to this by finding that children requiring the correction of, say, one and one-half diopters of hypermetropia, prior to removal of adenoids, were able after their removal to relinquish their glasses and make their extra accommodative effort without discomfort. A second observation noted, viz., that children with comparatively small amounts of hypermetropia, often hold their books very close to their eyes when reading—much closer than emmetropic children—although they, as a rule, see well in the distance. He has found that such children have nasal obstruction, and that it is more important to remove this than to correct their error of refraction. After removal of adenoids the extra accommodative effort for near work is often made without discomfort, and is not made, as formerly, in excess of requirement. In explanation of the mechanism by which this excessive accommodation is brought about, he considers it a result of the distinct and constant increased effort required in respiring through an obstructed nose, of the nature, in fact, of an overflow stimulus from the respiratory center.

The two cases reported showed all the characteristics of myopia and a minus glass was required to bring vision to normal. In each case adenoid growths were found on naso-pharyngeal roof. After removal of adenoids the myopic symptoms gradually disappeared, vision increased to normal without any glass and the patients have been free of any trouble with eyes or head.

Dilation of the pupil has been observed (de Schweinitz) to occur in vomiting and in forced respiration, and if forced respiration can induce dilation of the pupil there can be no reason why it should not be associated with spasm of accommodation. The overflow stimulus explanation appears to receive some support from the cases we get of facial spasm due to accommodative effort. Galassi and Harold Gifford describe what they call an orbicularis pupil reaction occurring when a forcible effort is made to close the lids. The contraction of the pupil which then occurs they ascribe to an overflow stimulus from the nucleus of the orbicularis fibers of the facial to the pupil-contracting center. We would all admit that the muscles of expression are implicated in forced respiration, and there is no reason why, in some people, a further overflow should not implicate the accommodation center. F. A. AND P. G.

A NEGLECTED DUTY.—TAYLOR, JAMES BRANCH, Bloomington, Ill. (*Ophthalmic Record,* February, 1906). The author believes his responsibility does not cease with the adjustment of glasses, but considers it his duty to endeavor to win back for the eyes their ability to again go without glasses without discomfort. He believes the physical condition of patients is frequently responsible for errors of refraction, causing asthenopia, and that after the physical condition has been remedied the glasses given for the correction of the refractive error can be laid aside. The oculist should watch such cases and remove the glasses when he believes they are no longer needed. M. B.

RETINA.

THE NATURE OF SIMPLE ATROPHY OF THE RETINA.—FERINTINOS, Patras, Greece (*Die Ophth. Klinik,* March 20, 1906), recapitulates his views as to the nature of retinal atrophy as follows: Every living being has a transient life. Not all similar beings nor all parts of the body of such beings die simultaneously. In pigment atrophy of the retina, senile involution occurs early. This involution begins with the last and progresses to the highest functioning parts. The more the functionability of the retina is lost the more the vessels which supply it (the chorioidal and central artery of the retina) become constricted. Until this constriction of the vessels becomes adapted to the new requirements of the retinal function the connective tissue proliferates. After completion or the approach to completion of the compensation, the connective tissue shrinks.

W. Z.

CLINICAL AND EXPERIMENTAL CONTRIBUTIONS TO THE OPERATIVE TREATMENT OF DETACHMENT OF THE RETINA.—WERNICKE.

GEORG (from the eye clinic of Professor Uhthoff in the University of Breslau. *Klin. Mon. fuer Aug.*, 1906, I, p. 134), took up on rabbits the experiments of Uhthoff, commenced in former years, for more exhaustive anatomic investigations and for controlling the various methods of operations, i. e., scleral puncture in connection with subconjunctival injections, galvano-cauterization, electrolysis, injections into the vitreous according to Schoeler and Deutschmann, and reports in detail a number of them, representing each type. A short review on intraocular injections warns us, as formerly insisted upon by Schoeler, Horstmann, Greeff and others, not to touch the vitreous body. More indifferent substances, as physiologic salt solutions, vitreous or aqueous humor, seem to be borne without irritation in the majority of cases. But their absorption takes place so rapidly that they can not very well be supposed to press the retina on the chorioid. Secondary shrinkage of the vitreous may, however, follow, giving rise to detachment of the retina. Injections of tincture of iodin or of vitreous body of rabbits and calves (Deutschmann) must be decidedly rejected, as they lead to small-celled infiltrations, which may assume such an extent that the whole vitreous is converted into an abscess with destruction of the eyeball. W. believes that the favorable results of Deutschmann must be ascribed to the preceding discissions, not to the injections of vitreous. He further calls attention to the rapid progress of cataract after them, which has been also observed by Deutschmann.

Of the other operative measures, electrolysis is not to be recommended, as it apparently leads to severe injuries of the vitreous.

Repeated punctures with evacuation of the subretinal exudations seem to be apt, by setting up local irritation, to produce circumscribed agglutinations. But here an injury of the detached retina is to be carefully avoided on account of the danger of tearing it at the periphery.

Cauterization of the sclera yields the most extensive and still controllable localized chorio-retinitic foci of agglutination. The irritation caused by it may be increased by scleral punctures.

Subconjunctival injections of salt solutions promote the absorption of subretinal exudations and the metabolism in the interior of the eye, but must not be used concentrated, on account of producing hemorrhages and obliterations of blood vessels from adhesions between conjunctiva and sclera, especially after previous cauterization and puncture, necrosis of the conjunctiva, glaucoma from obliteration of Tenon's space, transient opacities of cornea and lens. Therefore at the clinic at Breslau not more than 3 per cent. solutions are employed.

No operative treatment gives assurance of certain recovery from detachment of the retina, and the operative cures numerously published admit of no certain conclusions as to the value of any method of operation. W. quotes the literature of permanently cured cases up to 1905, which had been observed for at least a year. The total number of cured cases is 351, of which 84 = 24 per cent. were operated on, 158 = 45 per cent. treated, 109 = 31 per cent. not treated.

At the clinic of Breslau twenty-two cases of detachment of the retina were permanently cured from March 1, 1896, to March 1, 1903. In the last two years fourteen further patients were seen, of whom the histories are briefly given. These recoveries occurred in 422 cases of detachment of the retina (8.5 per cent.): Eight were treated with operation, 10 without operation, 18 not at all. The causes were in 25 myopia, in 3 traumatism, in 8 unknown. On 65 cases out of 422 the following operations were performed: 1. Repeated punctures with von Graefe's knife in 9 cases = 15 per cent. One case was cured. In the other four the readjustment lasted only for a few days or weeks. 2. Puncture with von Graefe's knife or Knapp's discission knife with following subconjunctival injections of 2 to 5 per cent NaCl in 41 cases = 62 per cent., of which 2 remained cured, 11 showed reattachment for some days or weeks. 3. Galvano-cauterization with divers punctures in 13 cases = 20 per cent., of which 2 were permanently cured, 7 transiently. 4. Discissions of the vitreous, according to Deutschmann, in two cases yielded no favorable results. Not more than 15 cases = 7.8 per cent., were permanently cured by operation. Only one case was damaged, so that even in consideration of this small number of results operation seems to be indicated. C. Z.

A Case of Detachment of the Retina Remaining Cured for Twenty-three Years After Operation.—Cohn, Herman, Breslau (*Berl. Klin. Woch.*, 1905, No. 51, p. 1584). By puncture of the sclera with a von Graefe's knife a large detachment of the inferior portion of the retina of a myope, aged 34 (the defect in the visual field extended from the periphery to 10° from the point of fixation), was and remained reattached. A month later a separation of the upper temporal quadrant of the retina took place, which also was cured by scleral puncture. After twenty-three years C. ascertained R. myopia 16.00 V. = 2/18, L. M. 15.00 V. = 2/12, reads smallest type at a very short distance. Large staphyloma posticum, atrophic foci of chorioid, no pigment in retina, no detachment and no remnants of the operation visible.

C. had likewise good results in thirty-nine other cases with puncture of the sclera. He recommends repeated punctures as long as there is perception of light, pressure bandage, jaborandi, reclined position, physics and heartloup. He has discarded injections of pilocarpin on account of their weakening influence. C. Z.

The Diagnostic and Prognostic Importance of Albuminuric Retinitis.—Blessig (*Wiener Medizinische Blatter,* Feb. 22, 1906). In chronic contracted kidney disease where the general condition of the patient is still good the beginning disturbances of vision are often the first symptoms, and the oculist is the first one to make the diagnosis of the nephritic condition. Albuminuric neuroretinitis often presents the picture of choked disc, which might point to the diagnosis of cerebral tumor. The general symptoms, such as headache, dizziness, vomiting, etc., often add to the difficulties of a differential diagnosis.

The prognosis of albuminuric retinitis *quo ad vitam* is very unfavorable. Numerous hemorrhages in the fundus of the eye make the prognosis still worse. The prognosis as regards vision depends upon the character of the underlying affection of the kidneys. There can rarely be a *restitutio ad integrum.* In most cases there will remain an atrophy of the retina or of the optic nerve. In nephritis gravidarum the prognosis is usually good; here, with the improved condition of the kidneys, the changes in the eyes may disappear entirely. Detachment of the retina as a complication of albuminuric retinitis has not been observed. J. G.

SINUSES.

Ethmoidal Mucocele.—Bellenzona, C., Pavia (*Annali di Ottalmologia,* Nos. 11-12, 1905). A patient, 25 years old, had had a mucocele on the left side for about ten years, which was not connected with trauma. The mechanical and functional symptoms were slight. Operation through the orbit was followed by complete cure. Histologic examination of the excised wall showed an outer covering of epithelium almost intact and a subepithelial degeneration. R. H. J.

Suppurative Mucocele of the Frontal Sinus with Mucocele of the Right Ethmoid Cells.—Di Santo, C., Naples (*Annali di Ottalmologia,* Nos. 11-12, 1906). The patient presented two large swellings, one corresponding to the right upper lid, the other lower down. The right superior orbital wall was pushed down into the cavity of the orbit and the eyeball projected downward, the movements being restricted upward. Rhinoscopic examination showed bulging of the lamina papyracea and a fleshy mass in the middle meatus. Both cavities were opened externally. Pus was found in the frontal sinus, mucus in the ethmoid cells. The fleshy mass in the nose proved to be an adenoma. Recovery was uneventful. R. H. J.

Ocular Disease in Relation to Nasal Obstruction and Empyema of the Accessory Sinuses.—Libby, George F., Denver (*Colorado Med.*, March, 1906), points out the anatomic relationship between the orbit and nasal cavities and accessory sinuses, and calls attention to the fact that in some diseased conditions of these cavities the early signs and symptoms may be referred to the eye. He gives the ocular signs and symptoms that may arise as a result of nasal and sinus involvement. A bibliography is appended. W. R. M.

Head Pains and Eye Symptoms Caused by Inflammation of the Accessory Sinuses of the Nose.—Holmes, C. R., Cincinnati (*Ohio State Med. Journal,* February, 1906). The author gives the etiology, symptoms and diagnosis of empyemas of the nasal accessory sinuses and their relationship to diseases of the eye. A table is added giving differential diagnosis between the chronic and acute forms of sinus disease, and the author has classified the various eye lesions that may arise as a result of nasal and sinus involvement. The paper is illustrated and clinical cases reported.
W. R. M.

A Case of Most Acute Suppuration of an Accessory Sinus of the Nose, with Severe Involvement of the Eye.—Cramer. E., Cottbus (*Klin. Mon. fuer Aug.*, 1906, 1, p. 69), surmised from the various roots of the extracted teeth and empyema of the supramaxillary antrum that the latter caused an acute sinusitis of the ethmoidal and frontal cavities and perforation of the intraorbital wall, with following orbital phlegmon. The exsiccation of the cornea, being unprotected in consequence of the intense exophthalmus, led to the perforation of the cornea and destruction of the eyeball. A cure of the nasal affection was effected by opening the frontal sinus, according to Killian, and evacuation of the ethmoidal abscess with drainage of the nose. C. advises in every case of not spontaneous swelling of the lids and chemosis to examine very carefully the accessory sinus of the nose and treat them energetically. C. Z.

Affections of the Eyes Caused by Diseases of the Nose.—Paunz, M. (*Medizinische Blatter,* Jan. 25. 1906.) In the treatment of disease of the lacrimal duct and sac great care should be taken of the condition of the nose. Orbital phlegmon is usually of nasal origin. The muscles of the eye may sometimes become affected in diseases of the frontal sinus by the collateral edema. Suppuration of the posterior ethmoidal cells and of the sphenoidal antrum can produce an inflammation of the optic nerve in the optic canal. Suppuration of the sphenoidal antrum may also produce a paralysis of the oculo-motorinus, trochlearis and abducens. The uveal tract may also become involved in disease of the accessory sinuses.

J. G.

SYMPATHETIC OPHTHALMIA.

Sympathetic Inflammation, Also Some Observations Upon Serous Traumatic Iritis.—Fuchs, Vienna (*Graefe's Arch*, LXI-H., 2 Ab., from *Die Ophth. Klinik,* March 1, 1906). Under the title "Endopththalmitis Septica" the author groups what was formerly termed fibrino-plastic or purulent iridocyclitis or iridochorioiditis, including panophthalmitis.

In all of the eyes examined but one, sympathetic inflammation existed in the fellow eye. The author endeavored to determine in what percentage of severe traumatic inflammations sympathetic inflammation followed. Conscious of the great possibility of error, he calculates that it follows in 14 per cent. The characteristics of exciting inflammation are the cellular elements and the distribution of the infiltration in the several tissues of the eye. Lymphocytes, epithelioid cells and giant cells were present in one-half of the cases. Polynuclear leucocytes were rare, but mast cells and Russel bodies frequent. Bacterial staining always gave negative results. In general the iris was least, the ciliary body more and the chorioid most involved. The findings in the iris and ciliary body are alike in that the inflammation begins in the layers nearest the interior of the eye, in the iris posteriorly and the inner aspect of the ciliary body. The outer layers of the uvea are spared the longest. Plastic exudate is usually absent. In the above respects exciting inflammation differs from endopththalmitis, as in the latter the primary exudate (mostly polynuclear leucocytes) is found in the inner surface of the retina and between the cells of pigment layers, whereas the outer pigment layer and the stroma of the ciliary body, in the beginning, is free from exudate. In the chorioid the inflammation begins in the posterior segment. The anterior portion shows but little tendency to exciting inflammation, probably because of the circulatory conditions. The primary foci appear in the walls of the large vessels, while the corio-capillaries are long unaffected. The lymphocytes probably first occur outside of the vessels, but gradually penetrate the walls and block the lumen of the vessels. The arteries succumb last. The endopththalmitis, on the contrary, the vascular layer of the chorioid, is the least involved portion of the uvea, but superficial exudate, however, is rarely absent. Only rarely does superficial exudate appear on the chorioid; in general the exudate does not extend beyond the lamina vitrea. The peripheral yellow spots, considered by Dalen as the anatomic substrata of chorioiditis, were found but four times. Fuchs has found them in non-exciting inflammations and believes that they have no relation to exciting inflammation. The inflammation usually extends outwardly from the chorioid by way of the large ciliary vessels, the vena vorticosa and the ciliary nerves. Penetrating nodes are found in the sclera. The retina always shows infiltration of the vessels, especially the veins. The optic nerve shows even less typical involvement.

Exciting inflammation shows a tendency toward organization and not toward suppuration. The cells increase, the epithelioid and giant cells disappear, and large, long, pale nuclei within a homogeneous substance and later a striated stretched-ground substance takes its place. Embryonic connective tissue forms from the epithelioid cells. The original uveal cells disappear. Those found in the remnants of the uvea are new formed. The suprachorioida is frequently obliterated. The process of recession is slower than in endophthalmic plastic inflammation. In one case fresh infiltration was found in the cicatricially shrunken chorioid seven years after the primary inflammation. This is analogous to trachomatous inflammation.

Plastic exudate may be entirely wanting and when present is probably an accidental complication, due to mixed infection.

The contrast between endophthalmitis and exciting ophthalmia is interesting. The former sets in earlier and is in the superficial layers (pars ciliaris retinæ). The latter involves the stroma of the uvea, the pars ciliaris retinæ often remaining free. The former exudate consists of fibrin and leucocytes, the latter of lymphocytes. Fibrin is absent. Both forms of inflammation may be combined.

In sympathetic irritation the exciting eye showed no characteristic changes, consequently sympathetic irritation must be considered an independent affection. The typical findings in the exciting eye may be considered diagnostic. In three cases of so-called traumatic serous iritis the findings were different from those found in exciting eyes. The chorioid was uninvolved and epithelioid and giant cells were absent.

The method of migration to the other eye was probably of the same nature as that which takes place in tumor metastasis. If this is correct, then optico-ciliary neurotomy can give no protection. Evisceration is not safe, because of the eventual penetration of the sclera, and enucleation gives no absolute security because of the occasional presence of extrascleral growths of the process.

As to the diagnosis during life, the author considers it impossible. The danger of error is less the more frank the inflammation in the first affected eye. Perhaps serum therapy may solve the difficulty.

W. Z.

TRACHOMA.

The Pathology of Trachoma.—Goldzieher (*Wiener Medizinische Wochenscrift,* March 30, 1906). Trachoma is a chronic infectious disease of the conjunctiva. The anatomic basis of the affection is a lymphoid granulation, which at the beginning is confined only to the upper layers, but later on involves the whole conjunctiva and leads to the formation of scars.

As regards the etiology, the author does not consider blennorrhea and trachoma identical, although there are some forms of chronic blennorrhea that can not be differentiated from trachoma with papillary hypertrophy. On the other hand, the form of trachoma with gelatinous infiltration of the conjunctiva and the tarsus, where the secretion is very slight, is totally different from the clinical picture of chronic blennorrhea.

The clinical importance of the follicles is overestimated. The Germans call this disease "follicular affection" of the conjunctiva, in spite of the fact that there are numerous cases where trachoma exists for a long time without follicles. There are, however, follicular catarrhs of quite different etiologic nature, which disappear without the formation of any scars and without treatment, thus proving that the follicles have no pathognomonic significance for trachoma. According to the author, pannus originates in small marginal infiltrations, to which a net of vessels leads from the limbus; these infiltrations in the course of time progress more and more till they begin to exulcerate. J. G.

Clinical Aspects of Trachoma.—Vandergrift, George W., Brooklyn, N. Y. (*Brooklyn Medical Journal,* April, 1906). Vandergrift urges that there are objections clinically to considering that all the so-called forms of trachoma are a development of one phase out of another. Cases of trachoma present themselves under two distinct forms, or, better, perhaps, as two diseases, now included under the one term. The first is the form known as trachoma simplex, uncomplicated trachoma; the second, the advanced state after rupture and cicatrization of the granulations. Each of these two forms, generally looked on as variations of the pathologic condition, is, however, clinically distinct, arising as a separate disease and different in its later course from the other. It appears that the second never springs from the first or that the two are ever mixed, nor is there a transitional stage from one to the other. This distinction can at present be made a clinical one till pathology and bacteriology affirm or deny it. Pannus, entropion, etc., of the second form are never present in the first. The writer recommends strongly in both of the forms the use of bichlorid of mercury, 1/500. E. E. J.

A PRELIMINARY STUDY OF THE ETIOLOGY OF TRACHOMA, OR FUNGI IMPERFECTI IN THE SECRETIONS OF THE EYE.—ELZE, Zwickau (*Woch. f. Therap. u. Hyg. des Aug.*, No. 3, 1905), has made a study of the different forms of fundi found in conjunctivitis, including two cases of trachoma. He found in the eyes of a laborer who was working the moist soil of the bottom of a pond the ustilago. He says that we are not surprised that a vegetable parasite should grow in conjunctival secretions when we consider that it occurs in the saprophitic stage. A number of other culture investigations of secretion from the conjunctiva in a catarrhal state developed only sterile mycilium, the botanical order of which could not be determined. In several cases of conjunctivitis the penicilium crustaceum and the conidienform (an ascomyceten) were found, sometimes alone, at other times with other spores. Of the family of mucidinaceen, the botrytis was obtained in a case of catarrhal conjunctivitis and in an old trachoma case, but in the latter he considers the findings open to criticism, as the technic was faulty. Nevertheless, taken in consideration with the fact that in a second case of trachoma fungi were grown, it is of some importance. The phyllostyca and the pykniden fruit, together with hyalin spores, were found in a case of catarrhal conjunctivitis, but here again there was some uncertainty about the result. A workingman who a few months previously had been successfully treated for a follicular catarrh returned with a recurrence. A culture from the secretion grew many penicillia, a few cladospores, botrytis and also an alternaria belonging to the ascomyceten pheospora. An examination of the living room showed that the walls surrounding the bed were covered by small fumago or fungi. Cultures showed the same fungi that the conjunctival secretion contained. The wife was afflicted with a conjunctival catarrh. W. Z.

THE GEOGRAPHIC DISTRIBUTION OF TRACHOMA IN HUNGARY.—SCHOLZ, Kornél (From the eye clinic in the University of Budapest. *Zeitschrift fuer Aug.*, 1906, xv, p. 105). A new law of the United States of America prohibits the immigration of persons afflicted with diseases, especially trachoma. To save trachomatous emigrants the long journey to the ports, in which they are examined by ship surgeons, the Hungarian government ordered these inspections to take place in Budapest. Thus Scholz examined within 4 months 22,000 persons, with exact dates as to the places they came from, so that he was able to ascertain the percentage of trachoma in the populations of the various districts, and illustrated it on a map. Hungary has 4 large foci of trachoma: Upper Hungary, Southern Hungary, the Croatic frontier and the southeastern part of Siebenbuergen, fluctuating from 0.2 to 5.4 per cent., among the school children of the town Szabadka as high as 11.9 per cent.

No marked racial differences could be found in the distribution of trachoma. The clean Hungarian, or the generally well-to-do German farmer, if living in a diseased region, are as little spared as the less civilized Slovæ, while relatively few cases (but then very severe ones) are encountered among the Roumanians, which keep secluded from other peoples.

In former times trachoma was propagated in Hungary, as pointed out by Fewer, by soldiers returning from service to their homes, then by the annual migrations of laborers from the North to the fertile South at harvest time.

For many years it has been observed that emigrants, coming back from the United States, who frequently suffer from trachoma, spread the disease. This view is further corroborated by the fact that those districts are mostly infected from which emigration to America has been very common for 20 to 30 years, while others whose inhabitants participate in emigration only for the last few years are almost free from trachoma. The dissemination of trachoma by American emigration may occur in two ways, either by the Hungarian laborers coming in contact with emigrated Italians, Poles, Finlanders, Russians, etc., who furnish the greatest contingent of trachoma in the United States, or during emigration when pent up with a few trachomatous patients in close quarters on board the steamers. C. Z.

Treatment of Trachoma.—Imre (*Wiener Medizinische Wochenschrift*, March 3, 1906). The treatment is directed to the following symptoms: 1. The inflammatory inflammation and secretion. 2. The follicles. 3. The papillary hypertrophy. 4. The thickening and degeneration of the tarsus. 5. The sequelæ (trichiasis, etc.). Of the chemical remedies, lapis and cuprum are still much in use; they act against the infiltration of the mucosa and contract the blood vessels and act as disinfectants and also diminish secretion, but, on the other hand, they hasten the formation of scars and cause trachomatous follicules to become harder. This result is not desirable, because the conjunctiva becomes thicker, more uneven, and *restitutio ad integrum* becomes impossible. The ideal treatment for these follicules and infiltrated plicæ is the mechanical one. In the course of this mechanical treatment it is desirable that as little injury and irritation be done as possible. The soft granules it is possible to express with the roller forceps, but the author is more in favor of an abrasion of the granules, as this procedure causes less injury to the mucosa.

Galvanocautery should be employed only when the affection is extensive. Excision of the fornix is rarely necessary. Exfoliation of the tarsus is quite efficient. J. G.

A TREATMENT FOR TRACHOMA.—PRATT, J. A., Aurora, Ill. (*Ophthalmic Record,* January, 1906). The following method of treatment is original with the author so far as he knows: The eye and lids are cocainized; then the everted lids are thoroughly massaged with boric-acid powder. The massage pressure is made with a cotton wound probe. There is extensive hemorrhage at the first treatment, which grows less as the granulations decrease. The massage ruptures many of the granulations and fills them with powder. The partially dissolved powder is allowed to remain under the lids and the eye bandaged, or cold applications made. After three days the treatment is repeated. After the first four treatments, which are three days apart, it is decreased to once a week. Improvement is rapid, and there is very little scarring.

M. B.

TUMORS.

CAVERNOUS ANGIOMA OF THE EYELID.—RISLEY, S. D., Philadelphia (*Ophthalmic Record,* March, 1906). Eleven weeks' old child, with history of rapid growth of tumor of right lower eyelid. There was a dark red, purplish, chestnut-like tumor occupying two-thirds of the lid. Somewhat pedunculated. When the child cried the tumor became so tense as to almost burst. In order to avoid hemorrhage, an attempt was made to destroy the growth by electrolysis. It was not successful, as evidences of spreading became manifest. The growth was finally successfully removed by the use of an Ericson's suture. M. B.

TREATMENT OF PALPEBRAL EPITHELIOMA. BLEPHAROPLASTY WITH VERTICAL SLIDING FLAPS.—ROLLET (*Revue Générale* *d'Ophtalmologie,* Feb. 28, 1906). Rollet's operation, after the removal of the neoplasm, is that of a vertical sliding flap, and is applicable for the lower lid. The epithelioma is removed by including it in two vertical incisions which are united by a horizontal one, and they are to be made sufficiently far into healthy tissue. The upper edge of the horizontal incision becomes the new lid border. The vertical incisions are now prolonged and the tissue between them is freed sufficiently in order to slide the flap of tissue to the level of the lid where it is sutured. B. E. F.

EPITHELIOMA OF THE EYELIDS. OPERATION VERSUS RADIOTHERAPY.—TROUSSEAU (*Annales d'Oculistique,* January, 1906), thinks that the prognosis in these cases is not so grave as some surgeons consider it, and that a large proportion of them can be operated on with satisfactory results. There is a superficial form of epithelioma of the eyelids which is cured by various kinds of treatment, and it may be admitted that there are benign varieties. Trousseau has seen remarkable results from *x*-ray treatment in such cases, but in the deeper and progressive form has met with cases in which there was an apparent improvement on the surface while the disease progressed toward the orbit.

While admitting that the number of his cases is too small to establish a principle, he states that his personal experience furnishes a large number of good results from operative surgery, and from radiotherapy a small number of favorable results and some unfortunate ones. He concludes that radiotherapy is still in the experimental stage, and that only time and experience can determine its comparative usefulness. G. C. H.

MULTIPLE FIBROMATOUS POLYPI (FIBROMES MUQUEUX) OF THE CONJUNCTIVA.—COSMETTATOS, Athen (*Die Ophth. Klinik,* No. 1, 1906). The growths occurred in the right eye of a 7-year-old girl. She complained of pain in the eye and of burning beneath the lids. The bulbar conjunctiva was slightly hyperemic. From near the outer angle of the outer lid there sprung several discrete tumors of the size of a small lentil. The growths were red and their surfaces smooth. They were attached to the conjunctiva by fine pedicles. Papilloma was excluded because of the smooth surface. Granuloma because of the absence of trauma. The fellow eye presented five similar growths. They were snipped off and the bases touched with nitrate of silver. Microscopically they consisted of a stroma and of epithelium. The stroma was made up of connective tissue fibrillæ, which anastomosed, forming a fine network containing embryonal connective tissue cells (mast cells) of a spindle or star shape, with one or more nuclei. The stroma contained many blood vessels which were either dilated or normal and contained either a few blood corpuscles or were empty. There were, besides, a few wandering cells. The stroma was covered by stratified epithelium representing a continuation of the conjunctival epithelium. Microscopically the diagnosis was fibroma of the mucous membrane.

W. Z.

Mucous Fibroma of the Bulbar Conjunctiva.—Trousseau (*Annales d'Oculistique,* March, 1906), reports the case of a man, 57 years of age, who stated that the trouble in his eye had commenced fifteen years before he applied for treatment. At that time he noticed a little whitish tumor, scarcely as large as a millet seed, on the nasal side of the bulbar conjunctiva of his left eye. It happened without traumatism, irritation or preceding disease of the eye. His general health was excellent, and he gave himself little concern about the growth, which did not inconvenience him. It developed slowly but steadily and gradually assumed a reddish tint. At the time of the examination it extended from the caruncle to the corneal limbus, but was not adherent to the latter. The size of the tumor was that of a large olive. It was of a reddish color, and the conjunctiva over it was traversed by large vessels. It was enucleated without difficulty, as it had no firm adhesions. Examination showed it to be a fibrous tumor of the submucous connective tissue. Trousseau believes that no similar tumor in this location has been reported before.

G. C. H.

A Case of Acquired Cyst of the Conjunctiva Containing an Embryonic Tooth-like Structure.—Stieren, Edward, Pittsburg, Pa. (*Johns Hopkins Hospital Bulletin,* September, 1905). This cyst developed after the tenth year of life and is unique in this respect. It was first noticed when the patient, a girl of 16 years, was 10 years old. It was then the size of a pin head. For three years it increased very little and did not trouble her; it then began to grow and caused her annoyance. It could be seen on the bulbar conjunctiva as the patient looked down and in, it was about the size of a navy bean, could be moved slightly in all directions, and had the appearance of a dermoid. The tumor was removed under holocain and was found rather firmly attached to the episcleral tissue. There was loss of some straw-colored fluid. Within the mass there was what appeared to be a well-formed incisor tooth, white, with a covering, no doubt periosteum. It had a well-defined crown and neck, with a tapering extremity resembling a fang. The "tooth" was 15 mm. in length, 9 mm. in widest diameter and of 2 mm. average thickness. The histologic examination showed a well-developed bone formation.

A case similar to this was reported by Galtier under the title of "Subconjunctival Osteoma" in the *Annales d'Oculistique,* March, 1895. He says that only in the work of deWecker and Landolt is mention made of these cases. Three are there mentioned: one by von Graefe, one by Saemisch, and one by deWecker. Galtier considered his case as one of misplaced bone, being detached from one of the orbital walls by injury. To this Stieren objects for the reason that in the other cases no injury occurred and because in the examination of his own case embryonic tissue was shown, proving that bone can develop in the conjunctiva. E. E. J.

METASTATIC CARCINOMA OF THE CILIARY BODY.—CUTLER, C. W., New York (*Transactions of the American Ophthalmological Society,* 1905). Cutler's case was a woman, aged 33. The growth was secondary to carcinoma of the breast. Only two other cases of metastatic carcinoma involving the ciliary body and iris alone have been reported, one by Uhthoff, the other by von Briehn.

E. E. J.

A CONTRIBUTION TO TUMORS OF THE ORBIT.—BASSO, D., Genoa (*Annali Di Ottalmologia,* Nos. 11-12, 1905). The case was interesting from the symptomatology, the point of origin and the mode of development of the tumor. In the beginning of its development, the tumor manifested its presence by ptosis and paralysis of the superior rectus without exophthalmos. The existence of a papillitis directed attention to a possible orbital growth. These symptoms were followed by an irreducible exophthalmos, pushing of the eyeball downward and outward, and the appearance of a hard mass downward and inward. Total evisceration of the orbit, with preservation of the lids, and bulbar conjunctiva was performed. The lamina papyracea was removed, establishing a large opening into the nose. Recovery was perfect, and 8 months later there had been no recurrence. Examination of the orbital contents showed that the tumor arose from the periosteum at the apex of the orbit and had invaded primarily the rectus superior and the levator developing in their fibers without destroying them. The fibers were surrounded by a neoplastic infiltration of round and spindle cells. The growth surrounded the optic nerve without invading the sheath, but obliterating the vaginal space by pressure. All the elements of the orbit were surrounded by the growth, but perfectly preserved. The tumor was a sarcoma made up of round and spindle cells. R. H. J.

LYMPHOMATOUS TUMORS IN THE ORBIT AND IN THE EYE.—MELLER, Vienna (*Graefe's Arch.*, lxii-i Abstr. from *Ophth. Klinik,* April 5, 1906), states that the formerly sharply defined division between leukemia and pseudoleukemia has faded before modern hematology. Many lymphomata have been found to be of leukemic origin. Others have proved to be part of a general lymphomatous tuberculosis. The author accepts Turk's nomenclature of lymphomata for all true hyperplastic tumor formations of the lymphatic apparatus.

The first case detailed is one of acute lymphomatosis with an orbital tumor. The course of the illness was one of severe cachexia and progressive anemia, terminating fatally. The blood changes were marked. The morphology of the leucocytes was especially pathologically affected. There was no increase in the colorless cells, i. e., there was a lymphatic leukemia. There was slight exophthalmos. The orbital tissues were correspondingly but slightly affected. The leukemic growths were principally in the conjunctiva and subconjunctival tissue. On this point the author lays stress, as to him it contains the solution of the occurrence of lymphoid tumors in the orbit, which, owing to the scarcity of lymphatic vessels in this situation, was difficult to explain. The author states that there are two localities from which such growths may spring, namely, the interstitial connective tissue of the tear glands and the mucosa of the conjunctiva, the superficial layer of which is adenoid tissue. According to the author, the examination of all these cases shows that the growths had their origin either in the fornix conjunctiva or from the traces of adenoid tissue near the tear glands. The aggressive character of these tumors is in contrast to that of leukemic glandular and milz tumors. This is explained by the author by the fact that in the orbit all channels for the dissemination of the new-formed cells are wanting, so that these cells all remain within the orbit and form diffuse malignant neoplasms.

The second case was one of chloroma occuring in a 3-year-old child. The first symptoms were subconjunctival hemorrhage and slight exophthalmos. The diagnosis was made by an examination of the blood and was confirmed by the greenish color of one of the broken-down tumors on the skull during life. Exophthalmos is an early symptom of three-fourths of all cases of chloroma. The author agrees with Türk that the affection is an acute lymphomatosis, with green coloration of the lymphoid growths, with a predilection for affecting the periosteum and the bone marrow. In the first of the above cases there were chorioidal changes which the author concludes were of a similar nature to the general lymphatic affection. The flat saucer-like form of the infiltration he believes to be due to the fact that the chorioid is adapted through its perivascular lymph spaces, aided by the intraocular tension for a dissemination of the new lymph cells. Any obstruction to the carrying off of these cells will lead to the formation of an intraocular tumor. The author records such a case. Primary retinal growths entirely independent of the almost constant retinitis of leukemia may occur.

A case of lymphomatous disease of the conjunctiva, the limbus and cornea proper, is also given. W. Z.

ENDOTHELIOMA OF THE ORBIT.—DEHOGUES, J. L., Havana (*Archivos de Oftalmologia,* March, 1906), relates the case of a man, 30 years old, who presented himself with his left eye pushed nearly out of the orbit by a round hard tumor in the upper internal angle, which was first noted some three years before. The vision was about lost. After a negative result from classical treatment it was decided to operate, and the tumor was found to be attached by a pedicule deep in the orbit. Rapid and uneventful recovery and restoration of normal vision. A tenotomy of the inferior rectus, combined with an advancement of the superior rectus, was performed later with nearly perfect result. Under microscopic examination the tumor proved to be an endothelioma. Dehogues considers the case of special interest from the fact that a stretching of the optic nerve to such an extent and for so long a time did not result in its atrophy. There had been no return at the end of 2 years. H. M. F.

A CASE OF SARCOMA OF THE LACRIMAL GLAND, WITH REMARKS ON AUTOPHAGISM.—GOLDZIEHER, MAX, Budapest (*Centralbl. fuer Augenh.,* 1906, p. 65). A woman, aged 42, noticed for a year a gradual protrusion of her left eye, with impairment of sight, which had developed spontaneously. The left eyeball was displaced 3 to 4 mm. downward and 1 cm. forward. Chronic conjunctivitis, edematous swelling of the conjunctiva, cornea clear and transparent, as well as the other refracting media. The retinal veins were widened and tortuous. Optic disc was prominent, its borders indistinct. V. = fingers at 1 m. Partially adherent to the temporal half of the upper orbital margin a flat, well-defined, hard tumor was noticeable, of the size of a walnut. The skin over it was freely movable. The movements of the eyeball upward and outward were very much impeded. Through an incision below and parallel to the eyebrow the tumor was easily removed and its processes into the orbit extracted with a sharp spoon. The exophthalmus grew less and the motility improved, but the ophthalmoscopic condition remained about the same. V. = fingers at 3 m.

The tumor was ramified like cauliflower and presented the typical structure of a sarcoma of small round cells, originating from the connective tissue of the lacrimal gland, with destruction of the parenchyma. It also seemed to contain lacunæ, which, however, under higher magnifying power, proved to be large cells of phagocytic nature, which had eaten and digested the surrounding cells, excepting a few remnants. They were similar to those occurring in trachoma, called by Leber corpuscles cells. C. Z.

Two Cases of Melanotic Sarcoma of the Chorioid.—Parry, L. A., Brighton (*Ophthalmoscope*, February, 1906). Both cases were females, one an elderly subject, the other aged 34. The former gave a history of visual failure for six months, the latter for four months. Beyond detachment of the retinæ close behind the lens, there were no objective symptoms. Enucleation was done in each case, and the correctness of the diagnosis of intraocular growths confirmed, which proved to be melanotic sarcomata. M. B.

Sarcoma of the Chorioid.—Coomes, M. F., Louisville (*Amer. Pract. and News,* April, 1906). The disease appears but 5 to 7 times in 10,000 cases of eye trouble. The first stage is that of freedom from irritation. When, as is usual, sarcoma develops near the posterior pole, vision is reduced and refractive power lessened. There may be distortion of images. If the growth is at the periphery, a scotoma may appear, or it may be detected with the ophthalmoscope, especially if a detachment of the retina, with nodular form and abrupt sides (and lack of the usual diminished tension of detachment. P. H. F.) be found. In many cases the tumor appears yellowish-red or brown, covered with a fine network of vessels which shimmer through the still transparent retina. If a fluid exudate covers the growth, this picture is obscured and only a detachment can be made out. The first stage may vary from six months to four years. The second stage is that of inflammation. Severe pain is a usual symptom. This is generally due to increased tension, but occasionally to iridocyclitis. The detachment becomes complete, and this with the increased tension destroys sight. The third stage is that of perforation of the sclera. The fourth, and last, stage, that of metastasis.

Treatment means the radical removal of the diseased tissues. In the first stage, removal of the eyeball is sufficient. When tissues outside the globe become involved, thorough exenteration of the orbit is required. Coomes reports a case of enucleation for a growth of the sort under consideration in which less than one year elapsed between the time of the patient first noticing the growth and the time of removal. It is a question whether this rapid development indicates malignancy. The eye was stony hard and very painful. Eserin and iridectomy gave no relief. P. H. F.

A NEW EXPERIENCE IN THE DIAGNOSIS OF SARCOMA OF THE CHORIOID IN THE SECOND STAGE.—BUCHANAN, LESLIE, Glasgow (*Ophthalmic Review,* April, 1906). The writer records the history of a case of sarcoma of the chorioid complicated by the presence of cataract in which an iridectomy resorted to for the relief of increased tension was not followed by any immediate reduction in tension: A woman, aged 56, while waiting for the right eye to become ready for a cataract extraction, developed subacute glaucoma with markedly increased tension; a large iridectomy was made; before adjusting the dressings the operator tested the tension and was surprised to find that there was no reduction in tension, and the conclusion was arrived at that the true condition was an intraocular tumor; the globe was excised, and on opening it a small melanotic sarcoma was found growing from the neighborhood of the disc, and the retina completely separated and tightly pressed forward against the lens and ciliary body.

"The explanation of the non-reduction of the tension in this case is as follows: The anterior chamber was very shallow owing to the lens being pressed forward by the retina, and the entire globe was probably to a very slight extent distended. When the anterior chamber was opened and the few drops of aqueous which it contained were evacuated, the tension of the tunics of the eye was relaxed, and they then contracted on what was to all intents and purposes a separate cyst in the interior of the globe. This separate cyst was formed by the sclerotic behind and at the sides, but was bounded in front by the retina supported by the lens and ciliary body in such a manner that no rupture took place when the corneal wound was made. Now, it is, of course, clear that the mere fact that the tension was not reduced by the opening of the anterior chamber does not indicate that there is a tumor of the chorioid, but that the retina was separated, and it is only the association of increased tension with separated retina that in such a case would indicate that the separation was not a simple one. The tension of the globe is always reduced by the opening of the anterior chamber in cases of pure glaucoma, and the second and glaucomatous stage of chorioidal sarcoma is practically always the result of separation of the retina. If, then, a case is seen in which there is not satisfactory reduction of tension after opening the anterior chamber in a glaucomatous eye it is probable that the condition is intraocular tumor."

C. H. M.

Glioma Retinæ, Clinical and Histologic Report of a Case. —Krauss, Frederick, Philadelphia. Histologic Study.—Goldberg, Harold G., Philadelphia (*Annals of Ophthalmology*, October, 1905). The patient was a female, aged 3 years. The diagnosis of glioma of the retina was made and enucleation advised, but operation was refused. Nine months later the case was seen again, when it was found that the eyeball was greatly enlarged and protruding, causing exophthalmos and lagophthalmos. Enucleation was performed. The parts healed perfectly without apparent recurrence of the tumor, but the child died shortly from convulsions. No autopsy.

The histologic study of the enucleated eye does not present findings differing especially from other recorded findings. M. B.

The Prognosis and Treatment of Retinal Glioma.—Rochon-Duvigneaud (*La Clinique Ophthalmologique*, March 25, 1906). The writer states he has the complete records of eight enucleations for glioma of the retina. His paper is based on them, which, he believes, may be used to make deductions as to prognosis and treatment of glioma—that this is the object of his paper. In each of the eight cases the tumors were verified anatomically as being retinal glioma.

The first case was in a child of 25 months. An abnormal reflex from the eye fundus was noticed 7 months before having a glaucomatous attack which induced the bringing of child to hospital. Pupil fully dilated and a reddish growth in anterior chamber. Enucleation; optic nerve was involved, with friable masses adherent to sclera; two months later orbital exenteration; death in two months at age of 31 months. The total apparent evolution was 13 months, the actual duration a few months more. The author believes that there should have been a clearing of the orbit at once after the enucleation for the purpose of determining as to the invasion of the optic nerve, and that permission should have been had from the parents previously to examine the orbit in order to determine as to its invasion and so avoid a useless enucleation.

The second case was 8 months old. The eye condition had only been noticed six weeks before. Enucleation; globe apparently sound externally; optic nerve is small and apparently atrophied. Microscopic examination gave optic nerve atrophy, but no neoplasms found. After 7 months there was a return of the disease in the stump of the optic nerve. A thorough clearing of the orbit was made; three months later there was a return of the neoplasm in the lids and cranial bones; death in about one month at 20 months. This case seemed to prove that under these conditions an optic nerve apparently atrophied is a dangerous nerve and that it indicates orbital evisceration.

Third case, a child of 15 months; enucleation; optic nerve not augmented in size; histologic examination demonstrated a gliomatous point; death in six months from glioma of the other eye. Evisceration was indicated by the condition of the optic nerve.

Fourth case, child, 30 months; condition first noticed 18 months previous to consultation; enucleation; aspect of nerve normal, confirmed by microscope; cure, as proved by patient living 13 years after operation.

Fifth case, child of 4 months; small white spot in right eye was observed at birth; enucleation; optic nerve normal. Child seen two years later in perfect health.

Sixth case; enucleation; optic nerve normal. Patient remained well one year and some months after operation.

Seventh case; enucleation; optic nerve apparently normal; no recurrence nineteen months afterward.

Eighth case; similar to seventh; no recurrence after ten months.

The author asks how long a time after the enucleation can the child be considered as safe from a recurrence of the neoplasm. The study of numerous observations published on this subject show that the return occurs generally in a few months, and death intervenes in the course of the first year after operation, and that if one year elapses without the growth reappearing the danger is much lessened, and after two years of freedom from the disease a recurrence is very exceptional.

The possibility of the development of the disease in the fellow eye augments the gravity of the prognosis of glioma in general, but does not modify the maturity of the period of security. In effect, the interval which separates the appearance of a second glioma is rarely longer than one year. If a child operated on for glioma remains free for two years, then the fellow eye may be assured.

In reference to a thorough operation for the complete removal of the diseased eye and its surroundings, the author states that if at the point of the division of the optic nerve, which should be made a few mm. behind the globe, the nerve appears white and of normal volume, the prognosis is favorable, and the enucleation will have been sufficient, as shown by the fourth, fifth, sixth and seventh cases. If the nerve is somewhat atrophied, and though the microscope shows no tumor invasion of the nerve, the prognosis is less favorable, as shown by the second case; and then orbital exenteration should follow. But when the nerve is augmented in volume and the aspect is lardaceous, or when there is a grayish infiltration of it, there should be no hesitation, the orbital contents should be removed. The author considers that when glioma involves the nerve it is equivalent to the neoplasmic extension to the orbit.

B. E. F.

Glioma of the Retina, Enucleation, Cure.—De Speville (*La Clinique Ophtalmologique,* March 25, 1906). The author remarks that cures after ablation of glioma of the retina are rare enough to warrant the publication of those cases which come under observation; and for this reason he reports a case, the child at this time being in perfect health. The patient, a robust child of 3 years, had never been sick; five other children in the family all healthy. The father is gouty and suffers from migraine and gastric crises; mother has always had good health. Little patient was first seen Sept. 26, 1898. The parents had observed that for two months the left eye had a peculiar aspect when turned toward the right. The eye externally presented nothing abnormal; central vision was excellent. When the eye was directed toward the right the pupillary reflex very clearly gave the so-called amaurotic cat's eye. Ophthalmoscope demonstrated in the internal portion a whitish yellow tumor pushing into the vitreous humor, about the size of a pea; neoplasm was hidden by the iris when looking at the macula, which latter region was normal, as also were the upper external portions of the fundus. In the infeior equatorial regions were several small limited tumors presenting the aspect of white cotton. Enucleation Sept. 30, 1898. Microscopic examination proved the tumor to have been a typical exophytic glioma.

De Speville gives a second case which after enucleation was found to be one of the so-called pseudogliomata. B. E. F.

Racemose Neuroma and Hydrophthalmus.—Rosenmeyer, Ludwig, Frankfurt a. M. (*Centralbl. fuer Aug.,* 1906, p. 70). So far literature contains only 5 cases of this rare affection. While in these the hypertrophy of the skin from racemose neuroma and congenital hydrophthalmus occurred simultaneously, the hydrophthalmus in Rosenmeyer's case developed 3½ years after birth. At a former operation the chief mass of the tumor was found to be situated in the lid, from which fine and thick white bands extended into the orbit. The result with regard to the displacement of the globe and the appearance of the upper lid was good.

Rosenmeyer saw the child at the age of 5 years, when it showed a marked asymmetry of the face, caused by a diffuse tumor, spreading from the left upper lid to the temple and cheek. The left side of the nose, angle of mouth and ear lobule were lower than the right. The tumor felt like dough, was neither painful nor compressible, the skin over it was unaltered. The left hydrophthalmic globe was larger, and the diameter of the cornea 4 mm. longer than of the other, anterior chamber deep, pupil wide, did not react to light. The lens showed, for the last few days, opaque dots, the vitreous was clear, the disc pale without excavation. Sachsalber found an anatomic explanation of the connection of hydrophthalmus with racemose neuroma, in the ciliary nerves which showed the same changes as the nerves of the skin. Proliferations of the connective tissue, diseases of the lymphatics, considerable widening of the lymphatic spaces, on some places complete abolition of the nerve fibers cause disturbances in the interchange of liquids of the eye, leading finally to glaucomatous conditions. C. Z.

VISION AND COLOR PERCEPTION.

The Psychology of Yellow.—Ellis, Havelock (*Pop. Sci. Monthly,* May, 1906). The special emotional tone of this color is not definite or uniform. It varies at different historical periods, in different regions of the globe, at different ages. Among primitive peoples the delight in yellow is almost universal, being scarcely second to red, and occasionally confounded with it as the color of gold. The preference of children for yellow has been ascribed to its greater brightness than that of red. This preference diminishes with age, the girls outgrowing the liking first. Among students and adults generally, yellow is one of the least preferred colors, but women seem to like it more often than men. Throughout nearly the whole of Asia—ancient and modern—in Assyria, India, Ceylon, China, and the Malay peninsula, yellow is the supreme and most sacred color. Yellow dyes, like saffron and turmeric, are used in religious ceremonials, and may be a survival of sun worship. In Greece and Rome, yellow was the color of festival and marriage garments. It was, with red, the favorite color of Homer. Why have we ceased to prize the color of sunlight and gold, of corn and honey and amber? Ellis traces the revulsion of feeling to Christianity, which, aside for a liking for the dark end of the spectrum, opposed all "pagan" tastes. Red was too deeply rooted in the instinctive emotions of the race to be ousted by dogma, but yellow succumbed and became the color of envy in Rembrandt, especially in his later years, we find a survival of a love for golden light. The change in the race may also have been part of a natural development and progress toward the violet end of the spectrum, which is an ethnologic fact. Blue, the hue of heaven, became the color of the Virgin's dress, and yellow was devoted to treachery and jealousy. The use of yellow in priests' garments was prohibited in 1833, and it has never been used in the Protestant church. Judas was painted in yellow garments, and in some countries Jews were compelled to be so dressed. In France the doors of traitors and felons were daubed with yellow, and in Spain, under the inquisition, the yellow cross and yellow candle were borne in procession by the victims of the auto-da-fe. Another religious objection to yellow was the fact that from a symbol of marriage it had become that of love and of license. The Hetairæ and their Roman successors wore saffron-colored frocks and dyed their hair yellow. It was a reflection of this aspect that made of yellow the color of inconstancy and adultery. The primitive and classical glorification of yellow has not entirely died out, but has concentrated itself around the word "golden." Even in the use of this word, however, there lingers a remnant of dislike to the yellow color, the term being used to connote beauty, joy, splendor, delight, but not color, except as applied to hair or grain. Yellow as the color of bile and a jaundiced skin naturally is associated with choler and evil passion. Gall is the basis of words for green and even gold and yellow. Besides all these factors it is not at all improbable that there is also an innate psychic tendency physiologically rooted in the organism to dislike yellow. P. H. F.

Fish-eye Views and Vision under Water.—Wood, R. W. (*Johns Hopkins Univ. Circular,* April, 1906). As is well known, an eye below the surface of water sees the sky compressed into a comparatively small circle (sic) of light, the center of which is always immediately above the observer, the appearance being as if the pond were covered with an opaque roof with a circular window cut in it. Surrounding objects must appear around the rim of the circle of light, but we are unable to get a clear notion, since our eyes are not adapted to clear vision under water. By immersing a camera in water and photographing the circle of light we can get an idea of how these things appear to the fish. A number of interesting pictures were obtained with a device equivalent to a lens having a working angle of 180°. A pin hole in place of the lens gives even better definition. The apparatus in a horizontal position represents things as seen by a fish looking through the glass sides of an aquarium. The cone of light entering a fish's eyes has an aperture of about 96°, but the rays within it came originally from a cone of 180°. Thus, all three sides and the complete ceiling and floor of a room may be photographed, or when placed at a point where four streets meet at a right angle we can get a view looking down any three streets, the view including the ground up to the base of the tripod and the sky from the horizon to the zenith. Suspended from a balloon, it will photograph the entire surface of the earth out to the horizon in all directions. Of course, there is a good deal of distortion near the circumference of the circular picture.

P. H. F.

ADVANTAGES AND DISADVANTAGES OF GLASSES IN RAILWAY SERVICE.—BLACK, NELSON M., Milwaukee (*Amer. Journ. of Ophth.,* February, 1906). The writer was asked for an opinion as to the safeness of an employé who had been many years an engineman, and who on re-examination for vision had failed to come up to the required standard. Based on an experience of riding over 6,000 miles in the cabs of engines, in all kinds of weather and at all times of the day and night, he gave the following opinion:

"It is my professional opinion that a railroad employé (engineman or fireman) who has been in continued service for a period of not less than five years and who on re-examination falls below the required standard of vision, and such vision can be brought up to said required standard with glasses, his color perception meeting the required standard and there being no ocular disease *is a safe employé.* Such employé should be required to carry at least one extra pair of glasses. Such employé should be re-examined semi-annually to ascertain if there has been a further decrease in vision and if the glasses fully correct the visual defect."

He points out the fact that when the men enter the railway service they may have latent hyperopia and astigmatism and be able to pass the required examination; but fifteen years later they will be unable to meet the required standard of vision because of a reduction in accommodative power with increasing years. And yet at the later period these men are more useful and safe when the vision can be brought up by glasses to the standard required than are those with perfect eyesight and less experience.

He considers the objections raised to enginemen wearing glasses

—becoming smeared and dirty; covered with fog, mist, rain or snow; becoming fogged on coming from cold into warmth; the danger of breakage, the difference between visual acuity in the examining room and at long ranges and under certain climatic conditions; the legal aspect in case of accident. He shows that these objections may seem serious, but are really of no importance, and how each of these conditions can be easily remedied.

The writer is very warm in advocating the use of glasses by railroad men, the advantages being: 1. Correction of refractive errors of men long in the service. 2. Protection against wind, dust, mist, rain, snow and sleet. 3. Relieving reflection when running beside bodies of water, from snow or sand. 4. Overcoming the disturbance of vision when running toward the rising or setting sun. 5. Doing away with the heat and glare from the firebox in stoking.

In order to obtain the opinion of ophthalmologists throughout the United States, a circular letter was sent out requesting answers to several questions embodying the points made in this paper, and a table giving these replies is appended.

The conclusions reached are:

1. That the protection afforded by glasses is a distinct advantage to enginemen and firemen.

2. That the disadvantages of glasses in railway service are not sufficient to render an employé unsafe who wears them for protection or to correct a latent refractive error made manifest by increasing age.

3. That wearing glasses for protection of the eyes in railway service will tend to prevent the reduction in vision usually found occurring in enginemen at 40 to 50 years of age.

4. That the only method of eliminating glasses for distance in railway service in the future is to have all applicants for employment examined for latent refractive errors when they apply for a position, by men scientifically trained for such work.

5. That it is the consensus of opinion among the ophthalmologists of the United States that an engineman or fireman wearing glasses on duty is as safe an employé as one without them, if not safer.

G. H. M.

KYANOPIA AFTER CATARACT EXTRACTION.—ENSLIN, EDUARD. Stuttgart (*Zeitschrift fuer Augenh.*, 1906, xv, p. 136), observed kyanopia in numerous cases immediately after extraction of cataracts, mostly nuclear cataracts. It gradually decreased and disappeared after one or two weeks, and was never seen later than one month after the operation. Enslin explains the phenomenon by the theory of contrast. The human crystalline lens has, from childhood on, a yellowish hue, which increases with advancing age and is more pronounced in cataract, particularly nuclear cataract. In such eyes yellow rays have been acting on the retina for years, while the blue rays were absorbed by the yellow lens. After removal of the latter the contrasting blue rays suddenly gain entrance to the retina and arouse intense blue vision. This very rarely occurs if much cortical matter remains in the eye, which at first admits little light, gradually more by being absorbed, thus preventing the action of contrast. The few cases of kyanopia published are quoted, but, being of cerebral etiology, have no bearing on kyanopia after cataract extraction. C. Z.

RESEARCHES ON THE VISUAL ACUITY.—PERGENS (*Annales d'Oculistique,* January, 1906). This is a long and elaborate paper, the result of much labor and research. It is largely historical, commencing with the Arabs and the ancient Greeks and Persians, and does not admit of abstract. G. C. H.

Book Reviews.

Diseases of the Eye.—DE SCHWEINITZ, G. E., M.D., Professor of Ophthalmology in the University of Pennsylvania. A Handbook of Ophthalmic Practice. Fifth Edition, revised and enlarged. Octavo of 894 pages, 313 text cuts and 6 chromo-lithographic plates. Philadelphia and London. W. B. Saunders Company, 1906. Cloth, $5.00 net; half morocco, $6.00 net.

This excellent book deserves recognition from both the practitioner and student of ophthalmology. It embodies the most up-to-date and practical treatment of diseases of the eye and its appendages. All that is known to the profession as regards etiology, pathology, symptoms and diagnosis of diseases of the eye is to be found in this Fifth Edition. There are many new chapters, and the illustrations are excellent. The author's able treatment of the subject of sympathetic inflammation (ophthalmitis) deserves credit, as well as the subject of ophthalmia neonatorum. The technic of operative work and the use of the latest instruments are fully explained. In fact, there seems to be nothing left undone by the author to make the latest work of his the most complete of its kind. de Schweinitz's many years of experience qualifies him to speak with authority on the subject of the eye, and the book shows an eminently successful effort to cover the whole field of ophthalmology. G. I. HOGUE.

The Ophthalmic Year Book.—JACKSON, EDWARD, A.M., M.D., and DE SCHWEINITZ, GEORGE E., A.M., M.D. Volume III. Containing a digest of the literature of ophthalmology, with index of publications for the year 1905. 42 illustrations. The Herrick Book and Stationery Company, Denver, Colo.

This is a carefully compiled series of abstracts dealing with the principal articles having to do with the progress of ophthalmology during the year 1905, even including essays read before some society meetings in 1905 that have been published during the present year.

It is well printed, authentic, and a valuable acquisition to the library of the working ophthalmologist. H. V. WÜRDEMANN.

Anatomy and Physiology of the Eye.—BROWN, EARL J., M.D., and ZOETHOUT, W. D., Ph.D. With illustrations made from transverse sections of the human eye enlarged by micro-photography. 146 illustrations, 240 pp., including full index. Price, $2.00. Hazlitt & Walker, Chicago. 1906.

This little book has evidently been written more for the refracting optician than for students of ophthalmology. It is compiled from lectures given by the authors in Chicago. There are a number of original illustrations, particularly referring to embryology of the eye, and portraits of the two authors also embellish its pages. Dr. Brown's work is good, but is worthy of a more pretentious place for presentation. H. V. Würdemann.

Modern English.—Emerson, Henry P., and Bender, Ida C. Book One. Elementary lessons in English. The MacMillan Company, New York. MacMillan & Co., Ltd., London. 1906.

This reader for the teaching of correct language to children is probably the first attempt to pay some heed to the lessons that ophthalmologists have been trying to teach for so many years. So far as the typography, illustrations, and paper goes, it has been builded by Miss Bender according to the principles laid down by Dr. Samuel Risley in his article, "School Hygiene," in Norris & Oliver's System of Diseases of the Eye.

Its chief item of interest from the standpoint of the ophthalmologist lies in the variation of the type. When the child is required to exercise the mind in study, the lesson is printed in large-sized type so that the eyes may be used with as little effort as possible. On the other hand, when the interest is aroused, as in a story, a smaller font is taken. The wide spacing, the beautiful typography, and the intelligent discrimination shown in the selection of the illustrations, are a few of the good things that are called to the attention of not only the oculists, but especially to those who are responsible for the selection of text-books for our school children.

As an ophthalmologist and teacher, I give my heartiest commendation to the book. H. V. Würdemann.

Atlas of the Externally Visible Diseases of the Eye, with a Treatise on Their Pathology and Therapeutics.—Haab, O., Prof., Zürich,. Third improved and very much enlarged edition. With 86 pictures on 46 plates from water colors by Johann Fink, artist, and 13 illustrations in the text. Muenchen, 1906. J. F. Lehmann. 10 M. $2.50.

The superior features of this Atlas have been set forth in our reviews of the former editions. In the new edition, which has just appeared, the number of colored pictures has been increased by 6 and that of the illustrations in the text also by 6, representing microscopic preparations. The original discourse on the methods of examining eye patients has been amplified to an excellent treatise on pathology and therapeutics of the externally visible eye diseases, so that an almost entirely new work has been produced, improved in every respect. At the same time the price has been reduced, rendering the practical and useful book more accessible. It ought to be in the hands of every ophthalmologist.

C. Zimmermann.

Symptomatology and Diagnosis of Intraocular Tumors.—LANGE, O., PROF. DR. "Symptomatologie und Diagnose der Intraokulären Tumoren." Halle a. S. Carl Marhold. 1906. M. 1.20. $0.30.

This brochure of 57 pp., including a bibliography of 106 numbers, is thoroughly up to date from the German standpoint. The author, however, has paid little attention to American and British writers who have greatly enriched the subject, especially during the last decade. He does not agree with Schieck, who states that all chorioidal tumors are found to contain pigment on microscopic examination. He says, however, that the non-pigmented tumors are very rare. This author has also devised an ocular transilluminator. He also uses transillumination by means of the loupe in oblique illumination.

The essay will well repay reading by those specially interested.

H. V. WÜRDEMANN.

Anatomic Investigations of Diseases of the Central Retinal Artery and Vein and Their Sequelae on Circulation, with Especial Reference to the So-called Hemorrhagic Infarction of the Retina.—HARMS, CLEMENS, DR., Tübingen. Habilitationsschrift zur Erlangung der venia legendi. (Thesis for a professorship in the University of Tübingen.) 244 pp., with 5 lithographic plates and 14 figures in the text. Leipzig, Wilhelm Engelmann, 1905.

Harms discusses the anatomo-pathologic changes of the central retinal vessels, with the clinical histories of 12 cases, which were most thoroughly examined with all modern methods of histologic research, especially of staining and serial sections. Two of these cases presented the aspect of so-called embolism, 7 of hemorrhagic retinitis, 3 of glaucoma with intraocular hemorrhages. All were unilateral. In 9 cases the anatomic investigations revealed affections with complete closure of the stems (and partly their branches) of both central vessels, in 3 only of the retinal ramifications. The ages of the patients ranged from 20 to 70 years. The results were:

Closure of the central artery may be brought about: 1, by thrombosis of the previously free lumen without proliferation of the intima, (a) propagated from thrombosis of the carotid, (b) marantic, (c) caused by an affection of the stem of the central vein leading to stenosis with consequent retardation of the blood current, (d) by pressure or inflammatory actions on the walls from without. 2. Through primary affections of the walls, chiefly endarteritis proliferans, entailing occlusion of the lumen by proliferation or causing thrombosis. 3. Concrements of lime. 4. The occurrence of the ophthalmoscopic picture of arrest of arterial blood supply (so-called embolism) without closure of the central artery is not proven. 5. A real embolism of the central artery, as first described by von Graefe, does not exist anatomically.

Closure of the central vein may be produced, 1, by thrombosis, marantic or from slight local or general diseases; 2, through primary affections of the walls, mesophlebitis or endophlebitis proliferans, by proliferation or secondary thrombosis; 3, obstruction of the vein causes symptoms of engorgement in the retina: (a) hemorrhagic patches while the veins are tortuous and distended, but slightly or not at all diseased, and the arteries narrowed, (b) multiple hemorrhagic streaks or dots, the veins and arteries being narrowed, and the veins involved in the primary sclerosis; 4, the hemorrhages may be slight or missing (a) if weakness of heart and not complete plugging of the veins are combined, (b) if collaterals (cilio-retinal or congenital anastomoses) exist; 5, thrombotic closure of the central vein may be complicated by glaucoma; 6, extensive hemorrhages of the retina may be due to diffuse inflammatory diseases of the vascular walls. Regular hemorrhagic retinitis.

The clinical pictures of embolism of the central artery and thrombosis of the central vein can anatomically not be as sharply separated as formerly, since frequently both vessels are intensely diseased, and the same original affection of the one, if complicated with that of the other, may accordingly present either ophthalmoscopic aspect. Generally there is a reciprocal relation between both, inasmuch as the primary sclerosis of the one vessel, which is not completely closed, may create thrombosis of the other by diminished supply of blood flowing, and this again may increase the sclerotic process in the vessel originally diseased. The vessel, secondarily effected, may be occluded first and determine the clinical picture, while anatomically the primary changes of the other may predominate. There is no anatomic proof of retinal infarction, as first described by Cohnheim. It is rather a combination, clinical and anatomical, of so-called embolism of the central artery and thrombosis of the central vein.

The sclerotic process in the central retinal artery consists in a primary thickening of the intima, due to proliferation of the cells, or of the elastic elements, or to a formation of connective tissue on the inner wall, in the vein chiefly in a cellular proliferation of the intima, sometimes assuming the character of connective tissue, and frequently associated with cellular thickening of the adventitia. It is favored by mechanical causes, and most intense at the region of the lamina cribrosa, and may be encountered also at a youthful age. The etiology is doubtful.

The technic is minutely described and the histologic conditions well illustrated on excellent plates. While the author, in his exhaustive and critical review of the literature, rectifies former erroneous observations, made at a time when the means of anatomic research were insufficient, and confirms the views of others propounded in the last few years, the variety of his material, analyzed with the most exact methods, reveals many new facts, which advance very materially our knowledge of the anatomic processes of diseases of the central vascular system of the retina. We, therefore, recommend this elaborate and valuable work urgently to our readers. C. Zimmermann.

Practical Manual upon the Choice of Glasses and Spectacles and the Examination of Vision.—Scrini, Ancien Chef de Clinique Ophthalmologique a la Faculté de Paris, and Fortni, Médécin-Oculiste, Paris, France. (Manuel Pratique pour le Choix des Verres de Lunettes et L'examen de da Vision). Published by Vigot Frères, Paris, France. Small 8vo., pp. 233. Price, 4 francs.

Serini and Fortini have given us a very readable and useful book on this subject. After a brief description of the different kinds of transparent lenses, their numeration and their actions, followed by an excellent résumé of the emmetropic and the ametropic eye, they give, in brief detail, just sufficient of the various objective and subjective methods for the determination of ametropia, as would be needed by the practical clinician. To this are added two very important sections on binocular vision, a chapter on the necessary formulæ, and a final one on the different varieties of mounting corrections. The work is commended. Charles A. Oliver.

Epitome on Spectacles.—Oppenheimer, E. H., Berlin. Abris der Brillenkunde. Graefe-Saemisch, Handbuch der gesamten Augenheilkunde. Second, entirely new edition. No. 102, 96 pp., with 66 figures in the text. Leipzig, Wilhelm Engelmann, 1906. Subscription price, 2 M. $0.50.

While mathematical, optical and other considerations have found a splendid interpretation in other volumes of the great handbook, especially in those by C. Hess and E. Landolt, the present number discusses the subject in a practical way, i. e., merely its technical side. It is divided into chapters on manufacture and construction of spectacles and eyeglasses, under which the material, general mode of manufacture, various kinds of glasses, mountings, the construction of the single parts of spectacles are considered. Then monocles, reading glasses, fronts, lorgnettes, protectors, orthopedic spectacles for ptosis, entropium, stenopeic, shooting spectacles are dealt with, followed by a section on fitting and right position of eye glasses.

With this interesting and practically useful book the author has filled a long-felt gap. He deserves special thanks for giving all technical terms also in English and French.

Another innovation in this number is that the headlines of the single pages do not consist of the stereotype name of the author and title of the book, but on the subjects treated on the respective pages, which immensely facilitates orientation, enabling one to find rapidly the topics one wishes to look up. We anxiously trust that this plan will be adopted in the instalments still to be issued.

C. Zimmermann.

Squint, Etiology, Consequences and Treatment.—Schoen, Wilhelm, Prof., Leipzig. 250 pp., with 11 figures in the text. Muenchen, 1906. J. F. Lehmann. 6 M. $1.50.

The recognition of the importance of vertical squint has materially changed the doctrine of strabismus, according to Schoen, who gives in this monograph the results of his observations from 1892 on.

After criticizing the theories of squint, so far in vogue, he first designates, in a paragraph on the definition of strabismus, the fixation point of binocular vision as the coincidence of the points to which the foveæ of both eyes are directed, on which the accommodation is adjusted and the attention is concentrated. Squint is the condition in which the points of fixation of both foveæ do not coincide with one another nor with the point of convergence, and in which the point to which the attention is turned meets with one of the two points of fixation or accommodation, but not with the point of convergence. The essence of strabismus is the struggle against diplopia and for physiologic binocular or pathologic monocular vision. Now follows a chapter on the physiology of binocular vision, and the subject proper is considered under the following chief sections: causes and forms of squint, immediate consequence of squint: diplopia and its avoidance, nervous sequelæ, diagnosis, differential diagnosis, prognosis and treatment of squint. The many subdivisions can not be here enumerated. With due consideration of literature, the views of the authors are abundantly illustrated by cases. Schoen's book is a most elaborate work, very suggestive, whose careful study will amply repay the reader.

C. Zimmermann.

Guide to the Examination of the Eyes in General Diseases.—Heine, Dr. Privat-Docent, Breslau. (Anleitung zur Augenuntersuchung bei Allgemeinerkrankungen). 142 pp., with 19 figures and one plate. Jena, Gustav Fischer, 1906. 2.50 M. $0.65.

The purpose of this little book is to teach how to examine a patient methodically for eye symptoms which may be of value for general diagnostics, with omission of all of mere specialistic nature. Under objective examination we find the subdivisions: external inspection, focal illumination, ophthalmoscopy, skiascopy, and, under subjective examination: visual acuity, refraction, accommodation, visual field, color and light sense, binocular vision and ocular muscles. A general synopsis of the various topics discussed under the above chapters is placed in front, and at the end a list of eye symptoms in general diseases, arranged anatomically, in infectious diseases and intoxications with references to the respective pages in the text, and an alphabetical index. The author gives almost exclusively his own experiences gained as an assistant at the eye clinics of various universities in common labor with colleagues of internal medical, surgical, neurologic, otiatric, dermatologic, gynecologic and pediatric clinics. Although intended for the general practitioner, the specialist will find in this concise and handy discourse many valuable hints with regard to eye symptoms in diseases of the body.

C. ZIMMERMANN.

Diagnosis and Treatment of External Diseases of the Eye. (Ophthalmological suggestions for general practitioners.)—LANGE, O., PROF., Braunschweig. Halle a S., Carl Marhold, 1906.

This is an excellent exposé of the general principles of diagnosis and treatment of diseases of the eye, which can be recognized by inspection in daylight or artificial light, with or without magnifying glass, viz.: affections of the lids, conjunctiva, sclera, cornea, iris, lens capsule, glaucoma and glioma of the retina.

C. ZIMMERMANN.

The Employment of Alkaloids in Oily Solutions in Ocular Therapy. (Thérapeutique Oculaire: De l'Emploi des Alcaloides en Solution Huileuse.) —SCRINI, Chef de Clinique Ophthalmologique de la Faculté de Paris. Membre de la Société de Thérapeutique, Lauréat de l'Academia de Médécin Mention honorable (Prix Barbier, 1905) Institut de France, (Académie des Sciences). Paris, Vigot Frères, Editeurs, 1906. 8 vo. 108 pp.

Scrini's well-known method of employment of the alkaloids in oily solutions when used for the eyes is given in every detail in this volume: it constitutes most interesting and instructive reading.

First showing the inconveniences and uncertainties of aqueous solutions in regard to their preservation and application, he cites in detail his method to get rid of these disturbing factors by the employment of oily collyria. According to the author such collyria are easily applied and the tolerance is remarkable, while their actions are more rapid, more intense and of longer duration. He has never observed orbicular spasm during their use; neither has he ever seen exfoliation of the corneal epithelium from the employment of cocain in such a manner. The solutions themselves preserve the contained drug material, unalterably—for example, notably eserin, is never, he says, changed into the ordinarily irritating rubreserin and is always at its best for action. He has found that all of the oily solutions he has employed have remained indefinitely aseptic. As a result of experiment, he gives preference to sterilized olive and peanut oils as the best vehicles. CHARLES A. OLIVER.

On the Therapeutic Value of Yellow Ointment.—GELPKE, DR. Carlsruhe. Halle a. S. Carl Marhold. 1 M. $0.25.

Chemo-pharmaceutical investigations, which are discussed, led Gelpke to prescribe now exclusively unguentum hydrarg. oxyd. pultiforme rec. par. "Vulpius." G. found by careful bacteriological experiments, given in tabular form, that yellow ointment has some antiseptic properties, which had been denied by Weeks, in direct proportion to the minute distribution of mercury in the salve. As it is decomposed by light and air, it must always be dispensed in black, never white, jars. Its absorbing qualities are of advantage in torpid conditions. In acute affections of conjunctiva or cornea and as long as there is any irritation of the iris, it is absolutely contraindicated. Therefore G. warns against its routine employment in all kinds of affections. The valuable essay is of great practical importance and its study recommended.

C. ZIMMERMANN.

A Suggestion for the Treatment of Trachoma.—HIRSCH, G., Halberstadt. (Vossious: Abhandlungen aus dem Gebiete der Augenheilkunde. Vol. VI, No. 5). Halle a. S., Carl Marhold, 1906. 0.50 M. $0.12.

Hirsch's method consists in injections of oxycyanate of mercury (1:4,000 to 3,000) mixed with 1 per cent. acoin (7:3) into, not under, the conjunctiva, after previous instillations of cocain (3 per cent.) or acoin (1 per cent.), at two places of the upper and lower retrotarsal folds, so that a large portion of the conjunctiva becomes infiltrated. Pannous infiltrations also yielded in comparatively short time to injections near the sclerocorneal junction.

C. ZIMMERMANN.

Causes and Consequences of Right-Handedness.—WEBER, ERNST. Halle a S., Carl Marhold, 1905. 1.50 M. $0.37.

In the development of the child there is, and in the history of man of the stone age there seems to have been, a certain period in which no preference is given to one of the two arms. It is, however, noticeable from the eighth month of life and fully established at the age of one year. Right-handedness was apparently acquired originally, a predisposition being given in the body. The author discusses right and left-handedness in history, at the present time, and the theories of their causes, viz., the blood supply of the body, the position of the fetus in the uterus, the localization of the point of gravity, accidental causes and the topography of the various organs. The last hypothesis is favored and set forth in detail: Since struggling was the most original and most natural activity of animals and primeval man, those who fought with the right arm were less likely to succumb than the left-handed, who exposed their hearts to fatal injuries. Therefore more of those of dextral preeminence survived and propagated this quality to their offspring, and by the pedagogic influence of the example of the majority, it became universal. Heredity is further proved by the observation that left-handedness runs in single families from generation to generation. Perhaps even the general relation of right and left in nature has a deeper foundation than we may think of. Here the author reminds of the right and left turning sugars, the motion of the heavenly bodies in a certain direction.

Weber considers the predominance of the left hemisphere of the brain, especially the localization of the center of speech in it, as a consequence of right-handedness, mostly of writing with the right hand. He sees in this a possible disadvantage by insufficient utilization of one hemisphere and advocates to exercise from early youth also the left hand in writing, which would serve to equalize these most important differences.

The manner in which W. treats of this scientific question of general interest is very fascinating and the little book worth while reading.

C. Zimmermann.

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